# Chemical Week

May 18, 1957

Price 35 cents



Look for stiffer competition from Europe when common market comes into play . . . . . . p. 17

Management "war game"—two years of policy-making practice compressed into one day . . p. 30

'56 chemical imports are pegged at nearly \$274 million in not-yet-released government figures.p. 98

Germany's bid for more acetylene from oil is backed by Hoechst's new pyrolysis process . . . p. 112

CW REPORT: Better records-management can save you plenty. Here's what you should know p. 46

E P POWER MICROFILMS IN ANN ARBOR MICH

# SOLVAY quality SOLVAY potash caustic Potash in types, forms and packages to fit your requirements

# TECHNICAL GRADE

SOLVAY Technical Caustic Potash is the quality standard grade product that has been recognized by users as a leader in quality and dependability for over three decades. It is produced in both liquid and dry forms.

The dry product is produced in flake, small flake, walnut and solid forms, all of which are unusually low in iron, light in color and produce solutions of exceptional clarity. It is available in steel drums as follows:

Flake, 90-92%

350 lbs. net \[ \{1(2-, 18-inch caps and full open head\) \]

5mall Flake, 90-92%

400 lbs. net \[ \{(12-, 18-inch caps and full open head\) \]

Walnut, 90-92%

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675 lbs. net \[ \{(10-, 18-inch caps and full open head\) \]

675 lbs. net \[ \{(10-, 18-inch caps and full open head\) \]

Solid, 90-92%

675 lbs. net \[ \{(10-, 18-inch caps and full open head\) \]

SOLVAY Technical Caustic Potash in liquid form is available in 45% strength in both returnable and non-returnable 55-gallon steel drums, 660 lbs. net, and in 45-52% strength in specially-lined tank cars of 4,000, 6,000, 8,000 and 10,000 gallons capacity.

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Liquor, 45% Returnable 55-gal.—660 lbs. net Non-returnable 55-gal.—660 lbs. net

Liquor, 45-52% Specially-lined tank cars—4,000, 6,000, 8,000 and 10,000 gallons



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Here's An Example Of Such A Savings
Made Possible By Dowell Chemical Cleaning Service

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have Dowell clean it chemically



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Indians were manufacturing Kanawha area salt in 1670 at a point on the Kanawha River not far from the present location of the West Virginia capitol building. Today those same salt brines are instrumental in attracting to the area many of the leading chemical manufacturers of the world.

35 years ago a very small group of people and five acres of West Virginia land represented the beginning of what has become one of the nation's largest chemical industries. It is not by chance that these great names in chemistry . . . Carbide and Carbon, Du Pont, Ohio-Apex Division, Monsanto, Barium Reduction, National

Carbon, Diamond Alkali, Standard Ultra Marine . . . to mention a few, have turned to West Virginia which produces in one package all the basic requirements of this vast growing industry.

West Virginia's strategic location places it within overnight reach of . . . New York, Philadelphia, Detroit, Chicago . . . 4 out of 5 of America's largest markets. In addition West Virginia offers . . . every form of transportation, abundant water, ample natural gas, mountains of coal, adequate power, inexhaustable beds of rock salt, natural brines, adaptable, dependable workmen and cooperative communities.

We are anxious to provide you with specific information relative to plant location in West Virginia, whether you are a manufacturer of basic chemicals or a fabricator of plastics. West Virginia offers opportunities for profitable growth . . . great successful chemical plants which grew from tiny beginnings are proof of the Mountain State's tremendous potential. Investigate the opportunity state . . . West Virginia.



2

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May 18, 1957

- Hopes for more liberal depreciation schedule rises, but emergency-born fast tax writeoffs may well go by the board p. 20
- Union Carbide leases out a labor problem: Allied's Solvay
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pipeline for industry

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CELLUFLEX 21

CELLUFLEX 23

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MAY 18, 1957

VOL. 80, NO. 20

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder, Executive, Editorial, Circulatien and Advertising offices: McGraw-Hill Building, 330 West 42md 8t., New York 36, N. Y. Publication office: 1309 Nobis 8t., Philadelphia 23, Ps. See panel below for directions regarding subscriptions or change of address. Possible 1969 A. Great, Executive Vice-President and Trasurer; John J. Cooke. The Cooke of th

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# soda ash

(... from Wyandotte, of course!)

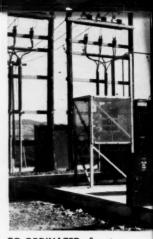
Have you talked with Wyandotte recently about your soda ash requirements?



Wyandotte Chemicals Corporation, Michigan Alkali Division, Wyandotte, Michigan. Offices in principal cities.



BUILT IN 14 MONTHS by The M. W. Kellogg Co., new ammonia plant is a unit of Standard's Richmond refinery, one of West's largest. All electric equipment is by General Electric, which also provided engineering service to help achieve fast start-up.



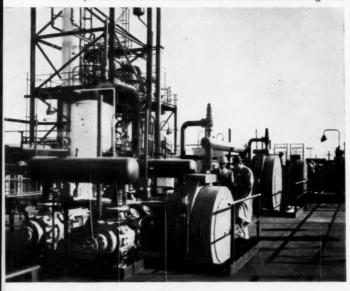
**CO-ORDINATED** for top reliability, G-E equipment in master substation for ammonia

# At Standard's Richmond, Calif., refinery ...

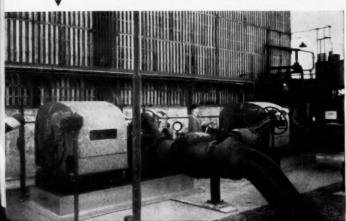
# General Electric engineering services help

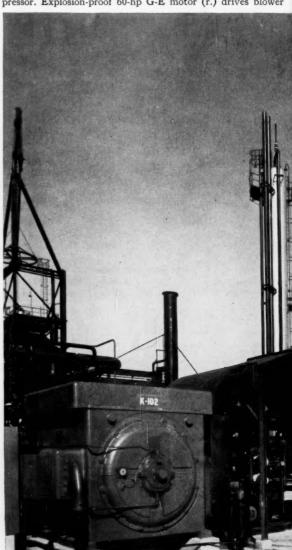
**OUTDOOR-LOCATED** on platform to drive compressors are 8 high-efficiency, enclosed, force-ventilated G-E synchronous motors (3 shown) with excitation obtained from substation's d-c m-g sets.

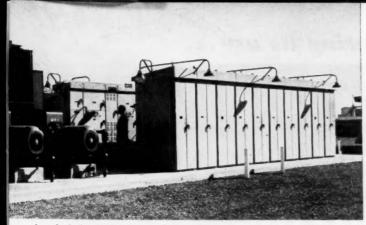
**PLANT'S BIGGEST,** a 4000-hp 12,000-v totally enclosed force-ventilated G-E induction motor drives synthesis gas compressor. Explosion-proof 60-hp G-E motor (r.) drives blower



**WEATHER-PROTECTED,** 2 rugged 350-hp **G-E** induction motors drive cooling-water pumps. Other plant induction motors are either enclosed force-ventilated or explosion-proof, fan-cooled.







plant includes 5000-kva transformer, 17 units of 12-kv metal-clad switchgear, 2300-v Limitamp\* motor starters, 480-v outdoor motor control centers, 2 outdoor motor-generator sets, and two 480-v transformers.

\*Registered trade-mark of General Electric Co.



**EASY MAINTENANCE** of plant's G-E metal-clad switchgear is shown by workman removing vertical-lift, magne-blast circuit breaker for inspection.

# speed opening of 300-ton/day ammonia plant

drawing clean air—via black ductwork and mushroom tower—from upper level of uncontaminated atmosphere.

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ver



General Electric power system, installed to meet rigid construction schedule, helps plant get fast start on profitable production

Standard Oil Company of California, Western Operations, Inc., recently added to its Richmond, California refinery—the largest west of the Rockies—a new \$11 million ammonia plant designed, engineered and built by The M. W. Kellogg Co. The plant's capacity of approximately 300 tons per day of anhydrous and aqueous ammonia is shipped to nearby California Spray Chemical Corp., a subsidiary, for conversion into fertilizer.

**GENERAL ELECTRIC** supplied the new plant's electric equipment—compressor drives, auxiliary motors, and complete outdoor substation with co-ordinated components. In addition, General Electric engineering services helped both customer and designer get the new plant from the discussion stage to on-stream in only 14 months.

An example was the contribution of General Electric installation and field service engineers. By supervising the installation of the electric equipment as scheduled deliveries arrived, they helped reduce field installation costs, speed completion of construction schedules, and hasten start-up time. To Standard, this meant getting into production faster, and thereby, showing a return sooner on the large capital investment tied up in the plant.

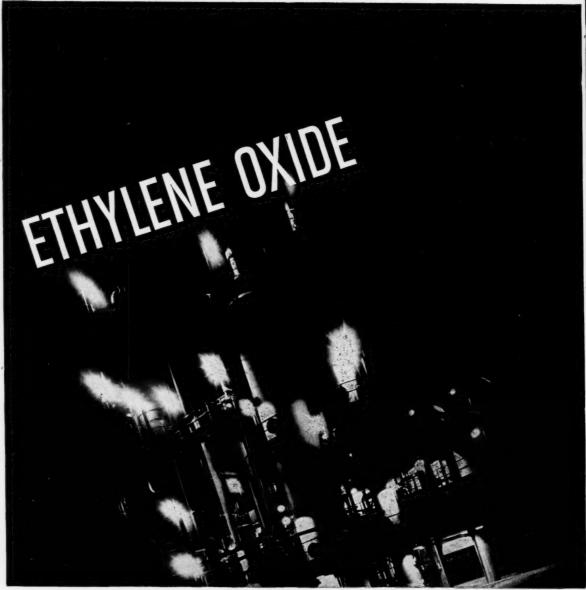
**IN ADDITION,** the 17,000-kva block of power will be integrated into the existing plant system. General Electric application engineering services, working closely with Standard and Kellogg representatives, helped provide the electrical equipment co-ordination and integration necessary to meet the plant's process power requirements.

For your new chemical plant, too, General Electric offers a one-manufacturer source of quality electric equipment and valuable engineering services to help provide you and your process contractor with an efficient, co-ordinated electrical system. Early in your planning, contact your nearest General Electric Apparatus Sales Office. General Electric Company, Schenectady 5, N. Y.

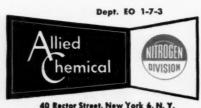
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# **Business** Newsletter

CHEMICAL WEEK May 18, 1957

1957

Objections to an atomic-power station for the Detroit area will be recorded this week, when hearings on Power Reactor Development Co.'s proposal for such a plant are reopened in Washington. The hearing, before Jay Kyle, of the Atomic Energy Commission, will allow witnesses—most of them brought forward by United Auto Workers and several other unions—to explain why they feel the plant would be dangerous (CW, Jan. 19, p. 22). Proponents of the plan will have their say later on.

Monsanto will soon unveil two major expansions of its St. Louis plant. Maleic anhydride capacity has been boosted (Monsanto won't at this time say how much); facilities for the manufacture of bisphenol A have been doubled.

**Du Pont, too, is talking expansion.** Teflon output will be raised 40%, the third increase since the Parkersburg, W. Va., plant's startup in 1950 (output was doubled by '54-'55 expansion program).

With formation of an international division, Olin Mathieson puts all its overseas production and marketing activities under one group. Henry Arnold heads the new unit, which will deal in Squibb medicinals and pharmaceuticals, Winchester arms and ammunition, nonferrous metals, and Olin cellophane and packaging products.

And Callery Chemical Co. has plans for a second Midwest plant, this one to make boron specialty chemicals for commercial use. The \$3-4 million plant, in Lawrence, Kan., is due to be in operation in early '58.

Texas chemical plants are still safe, in spite of week-end floods, tornadoes and thunderstorms. Although the floods have caused serious damage to farm lands, the chemical plants along the Brazos, Sabine, Neches and Guadalupe rivers are on high ground, appear to be out of danger.

Linde late last week settled the strike at its Essington, Pa., plant (see p. 22), and full staff is expected back at the oxygen/nitrogen plant this week. Linde's Moundsville, W. Va., acetylene plant is now operated by Allied's Solvay division (see p. 22); and settlement was reached at the Tonawanda oxygen/nitrogen plant last week. That leaves only Linde's Kittanning, Pa., plant still without contract, but negotiations are under way.

Britain was third-ranking exporter of plastics last year, behind the U. S. and Germany. Figures published by the authoritative  $\overline{F}$  inancial Times in London showed Britain boosted export sales to nearly \$84 million,

# **Business**

# Newsletter

(Continued)

a 14.4% increase over '56 sales. Biggest export gains were in polyethylene—up 40%; further expansion in polyethylene is planned. Britain's export gains, however, were not made at the expense of either the U. S. or Germany—American plastics exports were up 32.6%, Germany's up 22%.

Professional employees of Minneapolis-Honeywell voted "no union" last week. Professionals and technicians at the company's Minneapolis plant rejected both the Engineers and Scientists of America and the United Auto Workers Local 701 as bargaining agent. They also voted down a proposal to include technical employees with professional employees for purposes of collective bargaining.

The M-H vote is a blow both to the unions of professional people (e.g., ESA), which are trying to enlarge, and to the unions of production workers (e.g., UAW), which have invited the professionals to come on the bandwagon.

And, although Minneapolis-Honeywell is not a chemical processor, its employees were voting on the same issues that confront the chemical process industries.

Should the 27½% depletion allowance on oil be extended to asphaltic material, gilsonite and oil shales? Union Oil Co.'s A. C. Rubel thinks it should, "because they [asphalt, gilsonite, shale] have become competitive with oil from wells." Right now, operators are claiming the 15% allowance established for most minerals and metals. And most oilmen in shale-rich Utah queried by CW are not opposed to including the oil shale products with well-oil products for tax purposes.

There is some opposition, however. The high depletion rate on well-produced oil is an outgrowth of the high cost of finding and tapping pools of oil beneath the surface; oil shale is more easily developed, and its potential is readily assessed with accuracy.

There's also some uncertainty about the propriety of raising the depletion question at this stage of oil-industry relations with Congress. Still another consideration is the fact that right now, asphaltum, rock asphalts, bitumen gilsonite and some other minerals are omitted from the proposal—and the oil industry (particularly in the West) doesn't want to change the ground rules on depletion allowances in a way that might be harmful to the firms that have "gambled" on these minerals.

**Dept. of Agriculture officials deny there's danger** in its antigypsy-moth program. The program, which involves spraying DDT on some 3 million acres of woodland, is about 1/6 complete, has run into opposition from those claiming it is dangerous to humans and to beneficial insects, particularly bees (see also p. 64). USDA retorts that the spray program is approved by both the Public Health Service and the Fish & Wildlife Service, and won't hurt the bees.



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1957

# Recovery is good business

Consolidated's acid recovery process is typical of the services this company performs for Gulf Southwest Industry—it's good business for all concerned. By means of this service, black, corrosive sludge acid is converted from a disposal problem into an asset in the form of fresh, white, 99% sulphuric.

Consolidated is the big name in sulphuric acid for the Southwest. Five strategically located plants supply the petroleum, petrochemical and chemical industries concentrated in this area.

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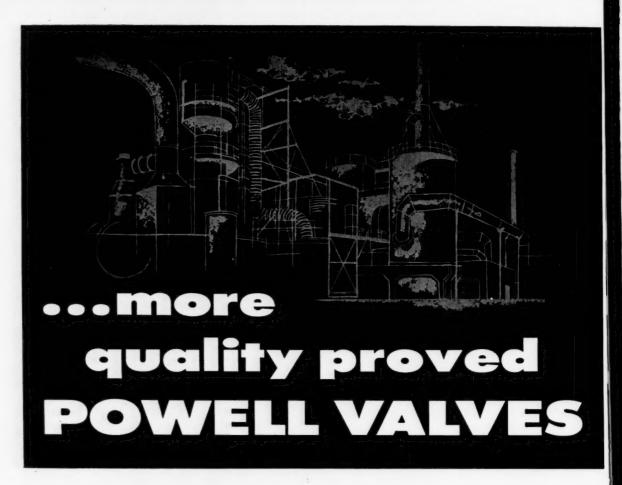




FIG. 2429—Large Size Stainless Steel O.S.&Y. Globe Valve for 150 Pounds W.P. at 500 F. or 230 W.P. at 100 F.

FIG. 1314A—1500-Pound Integral Bonnet Stainless Steel "Y" Valve.



FIG. 2453SG—Stainless Steel O.S.&Y. Gate Valve for 150 Pounds W.P.

FIG. 2342—Stainless Steel Bolted Cap Swing Check Valve for 150 Pounds W.P.





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It is a dark reddish-brown liquid which pours readily at room temperature and is soluble in acidic, alkaline or neutral solutions.

Akweons 674 has found ready acceptance as an acid additive for pickling among steel producers and fabricators because, they say, it offers a trio of advantages found in few, if any, such product:

- As an acid corrosion inhibitor, Akweons serves to protect the base metal after scale and other contaminants have been removed.
- It serves to minimize "sulling" or flash rusting of the pickled steel after rinsing.

• Akweons reduces noxious acid bath fumes to promote better working conditions and serves to protect plant equipment by attacking corrosion at its source.

#### What can AKWEONS 674 do for you?

Because of its excellent surface activity at all pH values, AKWEONS 674 can be useful as a surface active agent or wetting agent, emulsifier or fume depressant. It should be particularly useful in acidic solutions in which most surfactants are ineffective.

This wide range of properties is available to offer new or improved process and product possibilities—perhaps for you. Swift & Company will be glad to provide details and a trial quantity for your evaluation. Just return the coupon or write for details.



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# OPINION

# **BDSA** Divisions Are Needed

If you were buying a \$4,000 car, would you try to save 35¢ by refusing to buy a small but vital component of the carburetor? It sounds ridiculous, but that's one way of looking at what the House of Representatives has done.

In passing the Commerce Dept. appropriations bill, it made a \$3,560,-000 cut that would eliminate funds for the industry divisions of the Business & Defense Services Administration. While the move may well have been motivated largely out of anger at "budget double talk" by top Commerce Dept. officials (CW Washington Newsletter, April 13), the cut, if acceded to by the Senate, would be unwise. These BDSA divisions, like the carburetor on a car, play an important role in channeling the "fuel"-steel, aluminum, argon, electronic instruments, etc.-that powers our \$40 billion/year defense establishment.

Today's high-level civilian economy often has to compete with Defense Department and Atomic Energy Commission contractors for supplies of various raw materials. With such competition, somebody may well lose out. The military procurement program might be thrown out of joint; civilian users might be left without needed supplies.

It's in charting a middle course that the BDSA industry divisions come in, both on a formal and on an informal basis.

On a day-by-day formal basis, the industry divisions administer the official defense materials system, which provides preferential deliveries of basic materials to companies with defense and atomic energy contracts. And they act to see that military demands are not taking so great a portion of over-all capacity as to deprive essential civilian users.

The divisions operate on an informal basis, too. For example, when aerosol fillers told the BDSA chemical and rubber division that their operations were being hampered by a fluorinated propellent shortage caused by government demands, division personnel were able informally to work out a procedure for scheduling deliveries to government contractors that kept the civilian users operating.

While no businessman likes to operate under government controls, there are times that controls are necessary. And when they are, it's easier to work through people who, like the staff of BDSA's chemical division, have an appreciation of the chemical industry and its problems.

We in the chemical industry are not aware enough, perhaps, of the vital help that the chemical and rubber division gives to defense contractors; most of these activities are shrouded in secrecy. We do know how it has helped industry—not only by allocating scarce materials, but also by providing statistical data on capacity and end-uses for important chemicals as an aid to expansion planning, and by assessing the impact of military programs on civilian supplies of key chemicals.

The division has warranted and won the cooperation of the chemical industry. Working through the Manufacturing Chemists' Assn., firms like Monsanto, Diamond Alkali, Dow and Reichhold have sent high-caliber men to Washington to take their turns at running the division.

We're all in favor of economy in government. But it's false economy to cut out an essential function, then discover that it is essential, and finally restore it—elsewhere, perhaps, and under a different guise, and at certainly equal if not greater cost. After all is said and done, that \$4,000 car has got to have a carburetor.

Howard C. E. Johnson
Editor-in-Chief

# Safety Not Questioned

To the Editor: Chemical Week (Feb. 16, p. 32) reported the court decision in a patent suit originally brought by Plax Corp. and interwove with this story some comments about difficulties with plastic containers for sulfuric acid for dry-charge automobile batteries. On March 2 (p. 28) Chemical Week ran a follow-up on the latter topic, stating that the city chemist of Rochester, N.Y., feels that plastic battery acid containers are unsafe.

Plax Corp. manufactures dispos-

able plastic acid bottles, which are used by leading battery manufacturers in large quantities. The unfortunate juxtaposition of the two items in your original article (despite your designation of them as unrelated) has led some people to believe that the safety of the Plax acid bottle was being questioned. This bottle was, in fact, designed for complete safety in the transportation and dispensing of acid, and we have been advised by the gentlemen from Rochester referred to in your two articles that at no time have they ever intimated that the Plax bottle is not safe.

> ROBERT F. ELDER President Plax Corp. Hartford, Conn.

We regret the implication, through our interweaving of two stories (although we said they were unrelated), that Plax containers were involved. Certainly, no such implication was intended.—ED.

# MEETINGS

New York State Society of Professional Engineers, engineering industries exposition, Statler Hotel, New York, May 16-18.

American Institute of Mining, Metallurgical and Petroleum Engineers; theme: Melting and Solidification; Hotel Statler, Boston, May 17-18.

Technical Assn. of the Pulp and Paper Industry, 8th annual coating conference, Hotel Pfister, Milwaukee, May 20-23.

Armed Forces Chemical Assn., 12th annual meeting, "Setting the Sights for Industry," Sheraton-Park Hotel, Washington, May 22-24.

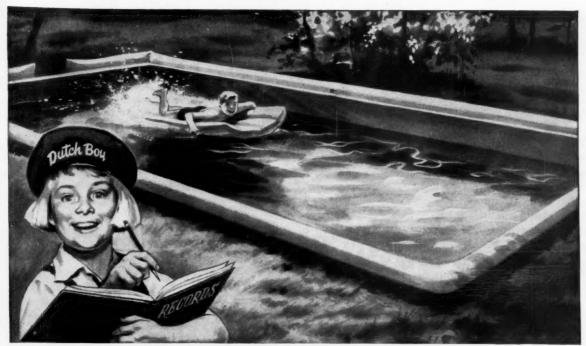
American Institute of Chemists, 34th annual meeting, Sheraton-Mayflower Hotel, Akron, O., May 23-24.

National Assn. of Purchasing Agents, chemical industry buyers group meeting, Hotel Marlborough-Blenheim, Atlantic City, May 27-29.

Chemical Institute of Canada, 40th annual conference, University of British Columbia, Vancouver, B.C., June 3-5.

National Society of Professional Engineers; theme: professional development of the young engineer; Statler-Hilton Hotel, Dallas, June 5-8.

National Technical Career Conference and Technical Personnel Recruiting Exposition, Hotel Sherman, Chicago, June 8-12.



Vinyl pool liner lasts for years! "Dutch Boy" Dyphos reduces weather damage and other types of deterioration to the vinyl plastic used in making this pool.

# Sayville research proves "Dutch Boy" Stabilizers reduce weather damage in vinyls

This king-size vinyl plastic swimming pool is good for years, the makers say.

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It's tough. And weather-resistant. The "Dutch Boy" sees to that!

National Lead researchers have developed a stabilizer - Dyphos® - that screens out the principal cause of weather damage in vinyls . . . the ultra-violet portion of sunlight.

Exposure tests at Sayville Test Station prove that Dyphos more than doubles the life of opaque vinyls . . . the kind used for swimming pools, gay beach umbrellas, colorful upholstery for garden furniture, sturdy telephone wire.

# "Dutch Boy" research is advancing

From "Dutch Boy" research have come sixteen other stabilizers, including two remarkable new ones, Flomax\* and Nalzin\*, which combine to produce beautifully clear vinyl products. Each a specific for factors harmful to plastic products. These stabilizers improve electrical insulation, flooring, toys, flexible tubing, film, sheeting, many other products.

And other "Dutch Boy" developments, thixotropic gelling agents, Bentone®s and Ben-agel®, are solving bodying problems in still more products such as paints, inks, cosmetics, new automotive finishes, lubricants...to name a few.

Get the details on these versatile "Dutch Boy" products. Mail the coupon below. For technical assistance in their application, write.

NATIONAL LEAD COMPANY

111 Broadway, New York 6, N. Y.

In Canada: Canadian Titanium Pigments Limited

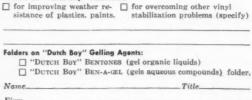
Folders on "Dutch Boy" Stabilizers:

# quality in many products

\*Trademark



... and get the plus of a name you know . . . for quality

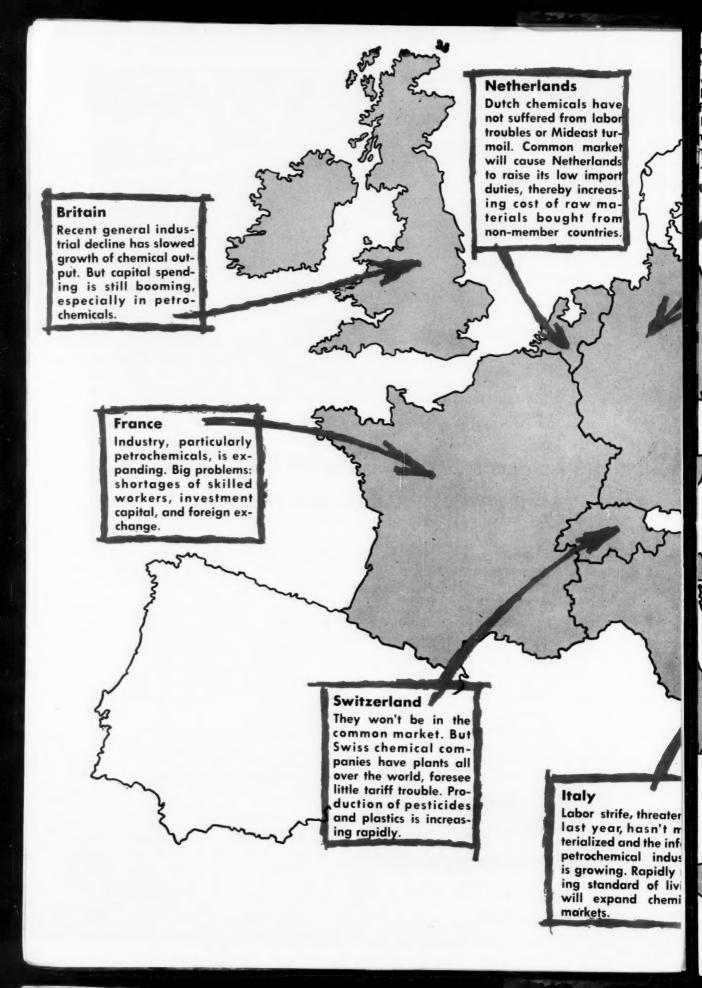


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Gentlemen: Please send literature checked below:

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KC-8494



st Germany acity is strained in but coal-tar dyefs and nitrogenous lizers. West German micals should suffer common market at ater 't m inf

# Chemical Week

May 18, 1957

# Common Market— Second Wind for European Chemicals

With the publication of the Euratom committee report last week, countries of Western Europe took yet another step toward becoming an economic whole.

Euratom, the program for development of atomic energy in Western Europe, is closely tied to the six-nation common market plan, which would gradually reduce tariff barriers between West Germany, France, Netherlands, Belgium and Luxemburg. If, and when, these plans go into effect, there will be no stopping the European chemical industry, which now is getting its second wind in a long steep climb from World War II.

European gains thus far have been impressive. CW correspondents in capitals of six key chemicals producing countries (West Germany, United Kingdom, France, Italy, Netherlands, Switzerland) report that the closing of the Suez Canal had no apparent effect on the chemical industries of these countries. Likewise, labor strife hasn't been harmful, even in England, where a strike in the engineering trades took 1.5 million men off the job in March.

Although annual chemical production increases in Europe have been leveling off over the past few years (a 15% increase in 1953, 11.5% in 1955), this is more a reflection of progress than trouble. The accelerated growth of the first 10 years following World War II was inflated by the basic need for replacing war-damaged industrial facilities.

New Hurdles: From now on, however, chemical expansion won't come easy. Except in Southern Europe, labor is now in short supply. In many countries, investment capital will be harder to get. Reason: in many countries, expansion is financed out of retained earnings. A few large companies get the bulk of public investment. This makes it difficult for smaller companies, or new growth industries

(such as many parts of the chemical industry) to get needed money.

The common market should help solve some of these problems by increasing the mobility not only of goods but of men and money, between countries. Labor, which poses an unemployment problem in Italy, for example, could help relieve some shortages in northern countries.

Aside from immigration barriers, however, other problems compound the labor shortage. One of the most irritating has been a lack of housing around otherwise-good chemical plant sites. England's Imperial Chemical Industries, for example, finds it must subsidize local contractors to get housing to shelter workers of one new plant.

But no matter what they do, European chemical firms won't find labor plentiful, and will have to concentrate on increasing productivity. This means more investment and, in a capital-short area, it should mean more opportunity for U. S. and other foreign investors.

Petrochemical Share: Expansion will be particularly heavy in petrochemicals. A production increase of 16% (by carbon content) was estimated for 1956. Petrochemicals is a fairly new, and as yet, small, field in most parts of Europe. For example, the first synthetic rubber plants are now in the planning stage in the Netherlands, France, Italy, Great Britain.

But to members of the common market—and to the U. S.—perhaps the most significant result of the new plans will be the way doors open and close to chemical sellers. U. S. firms will find themselves with a smaller share of the business. But each European company will find itself with a broader market—and broader competition.

For a country-by-country rundown of the European chemical situation, turn page.

## **United Kingdom**

In line with Britain's general economic decline during the past year, chemical production rose only 2% in the first six months of 1956 (the same period in 1955 saw a rise of 8%). The industry responded by investing still larger amounts—an estimated \$340 million—in capital expenditures, with emphasis on research facilities. It is felt that new British products will compensate for traditional exports lost to foreign countries with budding chemical industries of their own. Ex-

pansion is greatest in petrochemicals. Imperial Chemical Industries will spend \$45 million on petrochemicals this year; Shell will spend \$87 million, Esso \$27 million.

#### **Switzerland**

The Swiss "Big Four" (Ciba, Geigy, Sandoz, Hoffmann LaRoche) are all enlarging their plants or building new ones. All are booming, and an appreciable increase in profits is expected. General business conditions in Switzerland have been good. But

these firms do much of their manufacturing in other countries.

#### France

Chemical companies in France are faced with two serious problems: a shortage of skilled workers; and difficulty in finding investment capital. Industry finds it hard to compete with high-yield government securities in the money market. Still, France expects to meet its goal of doubling exports and halving imports by 1960. Greatest efforts will be in petrochemicals (France will soon have the first butyl rubber plant outside of America.) Also, by 1962, France plans to be one of the world's largest producers of sulfur.

## Italy

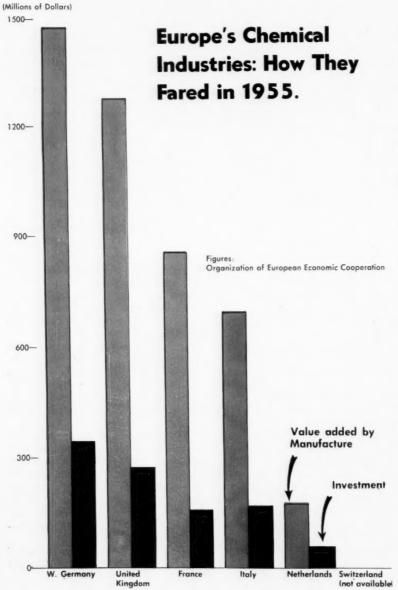
One of the few major European chemical-producing countries with a surplus of labor, Italy is expecting no slackening of chemical expansion plans. Montecatini, Italy's largest chemical firm, expects its \$62-million sales gain over the past six years to be equaled, if not exceeded, by gains during the next six.

#### **Netherlands**

The Dutch government is expected to approve, as is customary, all chemical expansion plans. Exports of chemicals (40% of production) will play a large part in the attempt to make up the Netherland's 1956 foreign trade deficit—it's their first since 1951. A new French import tax, coupled with a reduction in German duties, is expected to shift Netherlands-favored trade centers from France to West Germany. Biggest news: a proposed synthetic rubber plant near Rotterdam by Royal Dutch Shell.

# **West Germany**

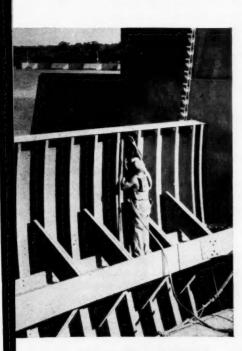
The capacities of the West German chemical industry are strained to the limit, with exception of those for production of coal-tar dyestuffs (suffering from world over-production) and nitrogenous fertilizers (hurt by East German dumping in Egypt.) Bayer is expanding its polyacrylonitrile and titanium production. Farbwerke Hoechst will start heavy-water production this fall. Behring Werke (Marberg) will start polio vaccine production soon. Because of wage increases and reduction of the work week to 40 hours, West German chemical prices should rise faster than they have been rising.





**Based on BAKELITE Vinyl Resins** 

# Anti-corrosion coatings dry fast, cut down-time



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ising. 1**957**  A paint system, based on Bakelite Brand Vinyl Resins, is now used extensively to protect metal gates and underwater structures from wear and rust on a nine-foot navigation channel on the Mississippi River connecting St. Louis, Mo., and Minneapolis, Minn. The channel's 27 locks and dams were constructed by the U. S. Army Corps of Engineers, who continue to operate and maintain them for year-round use.

Weathering from wind and ice in the winter and broiling sun in the summer have to be endured by these coatings, as well as constant abrasion from silt and debris carried by the churning waters. And long life is necessary to avoid interruptions of service for repainting.

Under virtually every kind of difficult service condition, coatings based on Bakelite Brand Resins resist corrosion and wear, and provide long years of service on every type of surface. Write for names of suppliers and a copy of our booklet, "Bakelite Resin Coatings for the Chemical Industry." Address Dept. XZ-34.

# It pays to specify coatings based on

Drying speed is an important feature of these coatings based on BAKELITE Vinyl Resins. This gate on Dam 16 was lowered into the water 24 hours after coating. The entire job took only 3 to 5 days. Formerly, each gate and each spillway was out of service from 8 to 10 days while being painted and allowed to dry.



BAKELITE COMPANY, Division of Union Carbide Corporation 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC.



BURT: Synthetic "natural" rubber sparks a custody fight.

# What Price U.S. Aid?

Can the government lay claim to discoveries made by a private firm operating under government research contracts? That's the question posed by a civil suit filed by the Department of Justice last week in District Court, Washington, D.C.

The suit is aimed at forcing the B. F. Goodrich Co. to turn over to the government all its technical information, plus a royalty-free license, on a process for producing Ameripol SN—a synthetic that is chemically equivalent to natural rubber.

Background: Basis for the government's contract claim lies in the scope of research conducted by Goodrich for the government. This included all research on rubberlike polymers of butadiene and its hydrocarbon homologs. The government says it's entitled to Goodrich's new synthesis, since Ameripol SN is a polymer of isoprene and isoprene is a butadiene homolog.

But, says Goodrich and Goodrich-Gulf President William Burt, "It was a development of Goodrich-Gulf Chemicals Inc. and bore no relationship whatsoever to a research contract between the B. F. Goodrich Co. and the government. It was based on scientific knowledge purchased by Goodrich-Gulf in Europe in 1954..."

Purpose of the suit, say government attorneys, is to make Goodrich's new process available to the entire rubber industry.

# Tax Aid Under Fire

Hopes of continuing fast tax writeoffs for defense-based industries faded to a minimum last week after attacks from two directions (CW Washington Newsletter, May 11).

- Senator Harry Byrd (D., Va.), one of the most outspoken critics of the Administration's budget, began hearings on legislation to further restrict fast tax write-offs. His first witness, Treasury Secretary Hubert Humphrey, who favors passage of the legislation.
- President Eisenhower last Wednesday came out flatly for ending most of the government's authority to grant rapid write-offs.

After the smoke cleared, the only mitigation for chemical process management—long plagued by high plant obsolescence rates—appeared to be in forthcoming revisions of "Bulletin F," the all-important official tax guide to the useful life of property.

This was also pointed up last week by Internal Revenue Service Commissioner Russell Harrington, who says that business response to requests for recommendations has been disappointingly slow in coming. He's backed in this by Darrell Parker, chairman of the IRS-Industry Advisory Group working on the revisions. Trade associations and individual business firms have until June 30 to make recommendations to Internal Revenue Service headquarters.

Write-off Program: Since last December, the Office of Defense Mobilization, acting on Administration suggestions, has closed 16 of the 24 remaining expansion goals of the Korean War peak list of 229.

But even this wholesale closeout isn't coming fast enough, according to Byrd. His argument: tax write-offs should not be used to encourage expanded production of a naturally booming civilian economy.

Although the ODM has already trimmed its definition of eligible areas to "direct defense needs," it fears Byrd's bill would tie its hands too tightly when it must make a decision on granting a particular write-off on the grounds of defense needs. The Byrd bill—though not literally — would, in effect, require an applicant for write-offs to "have in his hand" a firm government contract.

Bulletin Revision: As indicated be-



HARRINGTON: Without interest, rough depreciation rates.

fore, the major hope for industry lies apparently in liberalized depreciation rules under the internal revenue code.

Unless industry heeds Commissioner Harrington's warnings and offers suggestions, it's entirely possible that depreciation allowances for chemical processing installations may be as rough as ever.

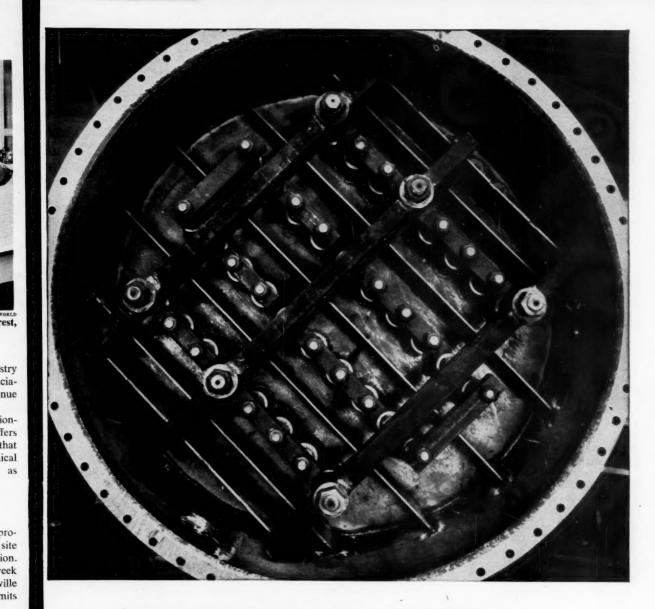
# Still Seeking Site

Reynolds Metals' difficulties in procuring a research-office building site at Louisville seem nearer solution. Latest step was a request last week by Reynolds that the city of Louisville annex a site outside the city limits and rezone it for Reynolds' use.

Reynolds' problems reached a climax in the second week of April, when the Louisville & Jefferson County Planning and Zoning Commission voted 5-2 against rezoning, from residential to industrial, 524 acres of state land the company had optioned in Lakeland, Ky.

New Opposition: Now the company seeks reclassification for 55 acres, also in Lakeland.

Complicating the company's problem is the fact that 13 acres are within Louisville city limits, while the remaining 42 are outside the city. Thus far, city fathers are reportedly in favor of rezoning the 13 acres, while the results of the hearings last week will determine the fate of the other 42.



# THERE'S MORE TO AN EGG THAN THE SHELL...

What's inside the shell really counts most. Take this section of a Type 347 stainless steel tower. The complex interior design required exacting craftsmanship-no more so, however, than is customarily applied to every Graver project. Graver's alloy fabricating skills and experience cover a wide range of work from the simplest vessels to mammoth field erected towers and tanks. Whether your project calls for stainless steel, stainless-clad, nickel-clad or other miracle metals, Graver craftsmanship assures rigid conformity to specifications.

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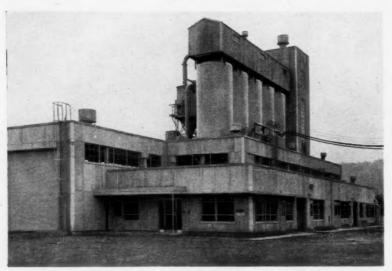
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# GRAVER TANK & MFG. CO., INC.

EAST CHICAGO, INDIANA . NEW YORK . PHILADELPHIA . EDGE MOOR, DELAWARE DETROIT . CHICAGO . TULSA . SANDS SPRINGS, OKLAHOMA HOUSTON LOS ANGELES FONTANA, CALIFORNIA



UCC'S MOUNDSVILLE PLANT: Strikers work for Allied, now.

# **Plant Finds Labor Peace**

In a move that may well be unique, Union Carbide's Linde division strike at Moundsville, W.Va., was settled last week by Linde's laying off plant employees, turning operations over to Allied Chemical & Dye.

At other Linde plants last week: hourly employees at Tonawanda, N.Y., signed contracts, as did workers at Youngstown, Ohio. Settlements had not been reached at the Essington, Pa., and Kittanning, Pa., plants although talks have been in progress at both locations.

The Moundsville solution was possible because of operating circumstances there. The year-old plant supplies all of its acetylene to the adjacent vinyl-chloride plant of Allied Chemical. Now, under an agreement with Linde, Allied has integrated the acetylene operation with its own vinyl-chloride operation, although Linde still owns the plant.

In making the transfer, Linde has laid off all of the dozen employees who had been working (and striking) at the plant. In turn, according to Allied, these 12 men have "applied and been accepted for employment" by the Solvay division. Solvay operates the vinyl-chloride facility, has taken over the operation of the Linde acetylene plant.

It is understood, though not confirmed, that the employees have signed a contract with Allied embodying virtually the same terms that Linde offered in negotiations proceeding from the strike. Allied already has an agreement at its Moundsville plant with the Oil, Chemical & Atomic Workers Union

Other Plants: At Youngstown, employees have been working without a contract since April 18, but have been receiving an 11¢ across-the-board increase plus a 1¢ increment depending upon grade. These were the terms originally offered by Carbide. Contract signing last week was on these terms

At Tonawanda, the union got a 7-17¢ increase (depending on grade) offered by Carbide, plus a 4¢ automatic across-the-board hike to become effective on Sept. 9, 1957. In addition, it won an eighth paid holiday, an extension of surgical and pension benefits, and the option of taking pay in lieu of vacation. Employees thus may earn double pay by working during vacation periods.

The Kittanning plant has been operating since April 19, with 19 hourly employees, but no contract has been signed. Last week, management and unions met for discussion, but nothing was resolved. In Essington, supervisory personnel are still operating the plant, and talks between management and unions have failed to yield mutual satisfaction, as of last week.

# **Fusing Niagara Power**

Representatives of 14 companies in the Niagara Falls area, most of them electrochemical or electrometallurgical processors, will build new plants to expand production capacities by 25-30%—if, and when, the State Power Authority makes 250,000 kw. of additional power available at rates lower than those now in effect. All of this would happen after completion of the proposed Niagara River Power project.

Earlier, city officials had opined that expansion was improbable in the Niagara Falls area. They attributed this to a shortage of building sites. Their estimate was that companies would have to expand production by using existing facilities to the maximum.

New Plants Stressed: But David Landy, Buffalo attorney and spokesman for the 14-company group, told CW that while some of the increase would come from existing facilities, most would flow from new installations. He added that the shortage of property in Niagara Falls was not critical enough to prevent such a building program.

In agreeing to expansions, the companies stipulated that the price of new power average 4½ mills/kw. hr. is well below the 6¼ mills they're now paying. Rates have been high because of importing power from Canada, a necessity since Niagara Mohawk's Schoellkopf power station disaster last year (CW, Sept. 1, '56), when one generating plant was destroyed in a cave-in.

Present plans call for the authority to sell Niagara Mohawk 445,000 kw. on completion of the project. The additional 250,000 asked for by Niagara industry would bring the total close to 700,000 kw. This is the figure given by R. Lindley Murray, Hooker Electrochemical's board chairman, as the power needed to operate at the new production levels.

The decision on whether the SPA will sell the companies any additional power won't be made until the authority actually gets a final go-ahead from the U.S. to start on the project. This may take several months, since Congress has not yet settled treaty conditions with Canada on how much of the Niagara River power may be developed by each country.



their use-are our business.

No matter what you make-baby oil, a pharmaceutical ointment, an agricultural spray-if you use white oil or petrolatum in your product or processing . . . we may be of help to you in two ways:

First, we can serve you by supplying you with the type of white mineral oil or petrolatum exactly suited to your specific needs. We'll tailor-make it if necessary.

Second, we shall give you the benefit—in product quality and technical assistance of more than half a century's concentration on producing better white oils and petrolatums and helping industry use them more profitably.

Because white oils and petrolatums are specifically our business, we believe we have more to offer you-productwise and servicewise-to help you turn out a better product.

We would like you to feel that our door is always open anytime you have any questions concerning white oils or petrolatums. You are always welcome. That is why we say "this offer never expires". Just call or drop a line.

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SPECIALISTS IN WHITE OILS AND PETROLATUMS FOR OVER HALF A CENTURY.

# COMPANIES

A. M. Byers Co. has withdrawn its proposal for a three-for-one split of the company's stock and has postponed until June 17 a special meeting of stock-holders. The meeting had been set for last week. At the meeting, shareholders will vote on a revised recapitalization program. The proposed split was turned down, explains a company spokesman, because "we didn't want to dilute the voting strength of the existing common and preferred stock."

Coastal Chemical Corp. stockholders have authorized the sale of \$2.5 million in class C common stock with proceeds to be used to help build the company's ammonia plant at Pascagoula, Miss. Total cost of the plant will be more than \$5 million.

Hagan Chemicals & Controls Inc. (Pittsburgh) has acquired Bradford Laboratories Inc. (Bradford, Pa). Bradford will operate as a department of Hagan's Hall Laboratories Division. Terms of the transaction were not disclosed.

Pittsburgh Coke & Chemical Co. will sell its subsidiary, Great Lakes Steamship Co. Inc., to Mutual Life Insurance Co. Pittsburgh Coke's president, Henry Hillman, says the company will realize about \$12 million, after taxes, from the sale.

## FOREIGN

Antibiotics/India: Officials of India's Hindustan Antibiotics Ltd. are negotiating with Pfizer Laboratories in an attempt to get aid in manufacturing streptomycin. The Indian company would like to make the antibiotic at its \$5-million pharmaceutical plant at Pimpri. The plant now makes penicillin. A \$2.1-million unit would be built for streptomycin production. Hindustan also plans to increase its penicillin production 60% in the near future.

Epoxy Resins/East Germany: East Germany's biggest chemical producer, Veb Leunawerk (Luena), reportedly has started to increase its epoxy-resin production. A former I. G. Farben member, the firm is doing research on a number of new types of epoxies—particularly highly fluid resins for repair of pipe lines, machine parts and flaws in casting.

Cellophane/East Germany: Veb Zellstoff-Und Zellwollwerke's (Wittenberge) new cellophane plant is in production. Plans call for a second plant to produce weatherproof cellophane, under the tradename Wilaphan. This type of product hasn't been produced before in East Germany.

Sulfur/Mexico: The Mexican Mining Development

Commission has approved a transfer of a sulfur mining concession from Pan Americ 11 Exploration Co. to Gulf Sulphur Corp.'s Mexican subsidiary (Compania de Azufre Veracruz, S. A.). The concession covers about 7,000 acres on the Isthmus of Tehuantepec. It could add substantially to Gulf's proved Mexican reserves of more than 13 million long tons of sulfur.

Hoechst/West Germany: Farbwerke Hoechst reports its sales in 1956 amounted to \$353 million, 16.6% more than in 1955. Exports accounted for 30.2% of total sales. The firm invested \$57 million last year on new plants and production facilities, spent \$19.3 million on research. During the year, Hoechst also started construction of a subsidiary plant in Brazil (to start production at end of 1957), established a dyestuff plant in New York (Progressive Color and Chemical Co., Inc.) and increased plastics production in its Spanish subsidiary. Plastics production has also been greatly increased in the home plant.

The firm is also spending over \$7 million to build finishing plants in Chile, Mexico, Colombia and Argentina. They will fit into a special sales drive in South and Central America.

# EXPANSION

Uranium: Kermac Nuclear Fuels Corp. (Oklahoma City), an affiliate of Kerr-McGee Oil Industries Inc., has signed with the Atomic Energy Commission to build a \$16-million uranium processing plant in the Ambrosia Lake area of New Mexico. The contract calls for production of 3,300 tons/day to begin in July, 1958, and continue through Dec. 31, '66.

Construction will get under way in the next few weeks

Phosphoric Acid: Electric Reduction Co., Canadian phosphate and chlorate chemicals producer, will build a \$5-million plant at Port Maitland, Ont., to make phosphoric acids by both the electrothermal and wet process.

Rubber: United Rubber & Chemical Co. will spend \$650,000 to modernize its Baytown, Tex., synthetic rubber plant. Day & Zimmerman Inc. (Philadelphia) will do the engineering.

Latex: Polymer Corp., Canadian synthetic rubber producer, is blueprinting a \$1-million plant to make specialty latexes. It's scheduled to be in operation by the end of 1957.

Pulp: Columbia Cellulose will up production 10% at its Prince Rupert pulp mill by adding a new \$1-million digester. Construction will begin immediately, should be complete by late 1957.

# Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.—America's largest producer of salt



# "Wet Storage"—an Economical Way to Store Rock Salt

A problem frequently encountered by salt-using companies is how to make the best use of available tank space for rock-salt storage. There are three basic ways to store salt in tanks: in brine form, in dry form, and in "wetted" form (dry salt stored under covering brine). Each method has certain advantages.

Salt stored in the form of fully saturated brine offers the important advantage of convenience: the brine can be pumped to points of use in the plant, eliminating salt-handling expense. However, the amount of salt which can be stored in this way is relatively small, because each cubic foot of brine contains only about 19¾ lbs. of salt in dissolved form.

Salt stored in dry form makes far better use of available tank space: each cubic foot contains an average of 72 lbs. of rock salt—about 3.6 times the amount which can be stored as brine. However, moving dry salt to points of use is time-consuming, inconvenient, and expensive. And dry-salt measurement is not as exact, or as easy, as measurement of fully saturated brine.

To get the benefits of fully saturated



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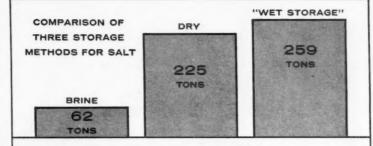
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brine, along with the space-saving storage of dry salt, many saltusing companies are now using the tankstorage method known as "Wet

Storage." This method—which actually combines features of dry storage and brine storage—offers these advantages:

- 1. Any given tank can store *more* salt than is possible when either dry salt or saturated brine is stored by itself.
- There is a constantly available supply of fully saturated brine for every plant need.
- '3. Much less handling of rock salt is required. There are fewer salt deliveries, fewer brine-making problems.

How "Wet Storage" works. When a tank is filled with dry rock salt, almost half the storage space is actually "empty," because the salt crystals do not pack solidly together. But when the voids between the crystals are occupied by fully saturated brine, additional amounts of salt can be stored. This is because fully saturated brine itself contains 2.65 lbs. of salt per gallon. Thus, with salt stored both "wet"



HERE'S PROOF OF "WET-STORAGE" EFFICIENCY. Columns show amount of salt which can be stored in a tank 20' deep and 20' in diameter—by the three different methods. "Wet Storage" is obviously the best method, makes full use of available space.

and in brine form in the *same* tank, maximum space is used for salt storage.

For example: in a circular tank 20 ft. in diameter, and 20 ft. in storage depth, the following amounts of salt can be stored, using the system of wet storage:

In "wetted" form the tank will hold about 231 tons of rock salt. In addition, there will be about 28 tons of salt dissolved in the covering brine. Total salt contents of the tank: 259 tons. Compare this with the other two salt-storage methods: The same tank will hold only 62 tons of salt dissolved in brine and about 225 tons in dry form.

Lixator best example of "Wet Storage"



principle. Storing salt under covering brine is the basic operating principle of International's exclusive Lixate Brine-Making Proc-

ess. In the Lixator, dry rock salt and fully saturated brine are combined, making fullest use of available storage space—and, at the same time, providing pure, crystal-clear brine for immediate use when and where it's needed.

In the Lixator (which is filled with rock salt), water is admitted at the top. This water dissolves some of the rock salt, to make fully saturated brine. This brine then fills the voids between the remaining salt crystals. As brine is drawn off, it is completely filtered by the salt crystals in the bottom portion of the Lixator. More rock salt is then automatically fed into the

Lixator from the storage supply, and more brine is made to occupy the empty spaces.

Today, International offers many types of Lixators—all based on the principle of "WetStorage." There are Storage Lixators, Silo Lixators, Sterling Model Lixators—in numerous designs to suit any plant layout.



# TECHNICAL SERVICE WITH YOUR SALT

Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on "Wet Storage"—just contact your nearest International sales office.

International Salt Co., Scranton, Pa.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; and Richmond, Va.

STERLING SALT PRODUCT OF INTERNATIONAL SALT CO., INC.

# PAPER and PAINT improve when 4 millionths of an inch is **BIG**

This is a microphotograph of one of Koppers new FORTIFIED styrene-butadiene latices. Even the largest particles in these improved DYLEX\* latices measure no more than 4 millionths of an inch; most of the particles are far smaller. This small particle size promises major improvements . . .

in paint, FORTIFIED DYLEX K-34 provides improved pigment binding strength, improved adhesion, and scrubbability. It can be used in combination with long oil alkyds, with proteinacious or cellulosic water-soluble resins and other styrene-butadiene latices.

in coated paper, FORTIFIED DYLEX K-52 improves the flow of casein, or starch base coatings, during application. It gives the starch better water resistance and retards picking. It increases the smoothness, gloss, and wet-rub resistance of coated papers, and improves their printability.

Write for technical literature describing these latices and the new catalog of synthetic chemicals manufactured by Koppers. There is no obligation, of course. Koppers Company, Inc., Chemical Division, Dept. CW-57, Pittsburgh 19, Pennsylvania.

Sales Offices: PITTSBURGH · NEW YORK BOSTON · PHILADELPHIA · ATLANTA · CHICAGO DETROIT · HOUSTON · LOS ANGELES SAN FRANCISCO

In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario



KOPPERS

# Washington

# Newsletter

CHEMICAL WEEK May 18, 1957 The concentration-in-industry report—due soon from the Senate Judiciary Antimonopoly Committee—is expected to foment a big controversy between business groups and antitrusters. The report will give statistics to show changes in concentration over the last several years. The figures are in depth as regards industrial groups and products.

Business groups are preparing to attack the figures on two points: (1) the concentration ratios to be shown are not conclusive, are not even reliable; (2) the Commerce Dept.'s Census of Manufactures figures, when used to trace concentration, are "misleading, incomplete, inexact and erroneous."

The Antimonopoly Committee will air the controversy. The man in charge here is Sen. Joseph C. O'Mahoney (D., Wyo.), who likens the study to his famed monographs for the Temporary National Economic Committee back in New Deal days.

The report is due within the next few days. Jesse Friedman, former Commerce Dept. expert who is doing the study, is now checking accuracy of the statistics. Friedman could give a tip-off on his report this Friday (May 17) in a speech he will make before the National Industrial Conference Board in New York.

The natural gas bill is just about dead in Congress. President Eisenhower vetoed the legislation last year, but based his rejection on what he regarded to be unethical lobbying by some oil representatives. Now, the bill is up again. Simply put, it would make clear what segment of the natural gas industry should be regulated by the Federal Power Commission, and what segment (independent producers) would be exempt.

Testimony by Administration witnesses has just about killed any chance of passage. Charles Kendall, counsel of the Office of Defense Mobilization, calls for strict cost accounting in natural gas rate-making. This splits the industry—producers and pipeline companies want rates based on the average fair field price of gas.

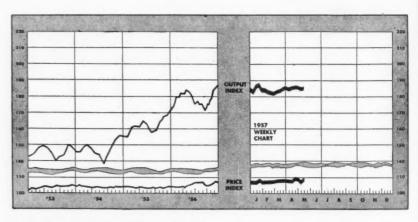
Likely outcome: the Federal Power Commission will try to write a compromise rate-setting formula between the extremes of fair field price and cost accounting.

The federal drive to end racial discrimination by government contractors is taking a new turn. The President's Committee on Government Contracts, headed by Vice-President Nixon, has asked government agencies to withhold business from companies that haven't complied with no-discrimination clauses in their contracts. To date, the Nixon committee has resorted only to persuasion, without actually threatening the withholding of contracts.

Companies that have complied will be named; the committee won't publicize those that have not.

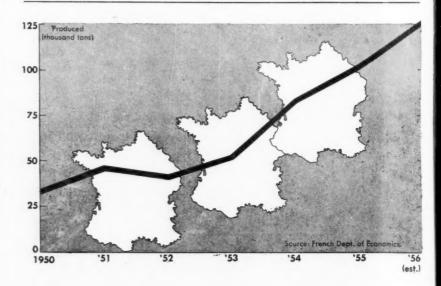
# Charting Business

CHEMICAL WEEK May 18, 1957



# **Business Indicators**

WEEKLY	Latest	Preceding	Year
	Week	Week	Ago
Chemical Week Output Index (1947-49=100)	186.4	186.2	181.9
Chemical Week Wholesale Price Index (1947=100) Stock Price Index of 11 Chemical Companies	110.0	110.0	105.9
(Standard & Poor's Corp.)	44.47	44.21	49.79
MONTHLY INDICATORS—Employment (Thousands)	Latest	Preceding	Year
	Month	Month	Ago
All Manufacturing Nondurable goods Chemicals and Allied Products	13,048	13,084	13,125
	5,399	5,404	5,504
	577.0	555.0	566,1



# Vinyls Pace French Plastics Climb

F RANCE'S plastic output in '56 hit a record 125,000 tons. In '50, French plastic production was a mere 33,000 tons. Vinyl resins rated first in the line-up with an output of about 45,-000 tons, followed by phenolics with Lower Seine region.

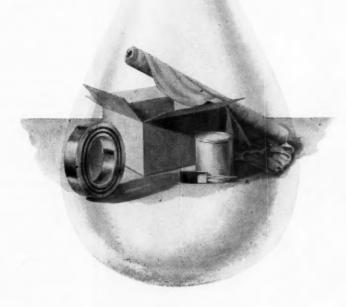
a score of 17,000 tons. Polystyrenes and amino resins tallied about 15,000 tons each last year. Meanwhile, demand for polyethylene is moving at a fast clip; three new plants are being built in the

# WETTING AGENTS.

for instance...

In latex manufacture, they act as a mechanical stabilizer for both natural and synthetic latices, prevent coagulation caused by high speed stirring ... in textiles, Nopco wetting agents permit increased speeds and efficiency in scouring, dyeing, finishing operations and for use in Sanforized\* fabrics...in paper, another improves absorbency of tissue and towels . . . in many metal working operations, a simple rinsing with a Nopco wetting agent economically protects "in process" metal parts against rusting.

These few examples of course barely scratch the surface of the countless processing improvements wrought by the many Nopco surface active agents. Quite possibly one or more of your processes could gain in efficiency by choosing and using precisely the right wetting agent for the job. The broad experience of the Nopco chemists is your best assurance of finding the right one. Ask their advice-on wetting agents, or wherever practical chemistry can help. Just write Technical Research Department, Nopco Chemical Company, Harrison, N. J.





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PLANTS: Harrison, N. J. . Cedartown, Ga. . Richmond, Calif. . London, Canada

Nopco Processing Chemicals include: Esters, Ethylene Oxide Condensates, Amides, Metallic Soaps, Sulphonates, Water Soluble Polymers, Resin and Wax Emulsions, Foamed Plastics For: Surface Lubrication . Detergency . Sizing . Plasticising . Softening . Emulsifying . Dispersing . Wetting . Defoaming . Thickening

# ADMINISTRATION

# 'War' Games: A New Test for Management



HARD AT 'WAR', a management team\* works out decisions that are . . .



keypunched and electronically compared with other teams' decisions.



while AMA's Appley and Ricciardi stand by for final results.

Thanks to a newly developed American Management Assn. game that makes "pushbutton warfare" lots of fun, chemical process management men shortly will have an opportunity to test and develop their decision-making abilities under competitive fire. Errors that would be costly in actual practice will cause no loss of anything except pride.

The game—which last fortnight received its final testing and public introduction at the hands of 21 corporate executives, including three chemical firm presidents, at AMA headquarters in New York—is played by hypothetical companies, each set on capturing the lion's share of the market for an imaginary product. Other goals: building up assets, increasing profits, and growth.

Chemical industry participants in the recent test play of the game were Ansul Chemical Co. President Robert Hood, W. R. Grace & Co. Polymer Chemicals Division President Theodore Miller, and Wyandotte Chemicals Corp. President Robert Semple.

Teams Start Even: Each company begins the game with 20% of the market, plus \$10.2 million in paper assets including \$4.4 million in cash, 150,000 units of inventory worth \$675,000 and a plant representing 1 million units of capacity.

Play, briefly, goes like this: The companies are given a specified time limit—usually about 20 minutes—in which to make their decisions for the quarter coming up. During the time limit, each must make eight basic decisions regarding production rate and selling price, marketing, research and development expenditures and whether to expand or cut capacity.

At the end of the time allowed—which is continually shortened as play progresses—each company records its decisions on an Operating and Decision Statement, which is processed by an IBM "650" electronic computer using a group of cause-and-effect formulas set up by AMA staff members conducting the game. The

\*(I. to r.) L. G. Haggerty, pres., Parnsyorth Electronics Co.; A. E. Perlman, pres. New York Central System; Theodore Miler, pres. W. R. Grace's Polymer Chemical Division, and R. E. Lewis, pres., Argus Camera Division Sylvania Electric Products.



These popular Pennsalt surface-active agents are winning many new users through their highly desirable properties. They are powerful detergents and wetting agents as well as effective emulsifiers. Both are highly stable to alkalies. NONIC 300 is also stable in the presence of strong acids and oxidizing agents. Excellent foaming qualities are obtained with both NONIC 218 and NONIC 300. Both are highly soluble in water and compatible with a wide variety of chemical compounds. NONIC 218 has exceptional grease cutting power and is particularly

suited to formulation with quaternary ammonium salts.

NONIC 300 is polyethylene glycol alkylphenyl ether and NONIC 218 is polyethylene glycol tert-dodecylthioether. Other NONIC surfactants are available which are chemically similar but modified to obtain special properties. It is well worth investigating these versatile surface active agents for use in your products.

Call or write us for samples and full technical information.



# INDUSTRIAL DIVISION PENNSALT CHEMICALS CORPORATION

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EXECUTIVE BRIEFING: Ricciardi briefs five management teams as they prepare to battle for a mythical market.

computer determines the effects of every company's decisions on every other company's position.

Reports of the computer's findings are then circulated on new Operating and Decision Statements to the companies, which must then make new decisions for the next quarter.

Game Has Potential: One of the most significant comments on the game's potential as a testing and training aid came from Grace's Miller, who, obviously pleased with the game, said he was going to suggest a similar layout for use by his company. He said such an arrangement would probably be used for training and testing third and fourth echelon management. "In this manner," he said, "we could have each company team composed of a marketing specialist, production authority, accountant and the like." Cost for such an operation would reportedly run around \$1,300.

AMA plans to include the game—developed under the supervision of staff vice-president, Franc Ricciardi, and special projects director, Clifford Craft, and based on armed services war games—as part of its training program of the Academy for Advanced Management this summer at Saranac Lake, N.Y.



OBSERVERS QUESTION AMA on training of executives with games.

AFTER THE BATTLE, 'company' spokesmen compare their strategies.





# Now, Two Cost-Saving F. & D. A.-accepted Plasticizers

for cellulosics...

Compare PFIZER CITROFLEX\* A-2

(Acetyl Triethyl Citrate)

The Food and Drug Administration has now accepted CITROFLEX A-2 for use in plastic food wraps—like the cellulose acetate food packages you see here. Nontoxic and odorless, CITROFLEX A-2 is accepted for both fatty and non-fatty foods. Most important to you, the cost of this citric acid ester is remarkably low, compared to other nontoxic cellulose acetate plasticizers.



for polyvinyls...

Compare PFIZER CITROFLEX\* A-4

(Acetyl Tributyl Citrate)

CITROFLEX A-4 is also nontoxic, odorless and accepted by the F.&D.A. for use in plastic packaging of either fatty or non-fatty foods. You can use CITROFLEX A-4 to plasticize vinyl films for meat wrapping...vinyl coatings for food containers...vinyl plasticisels for bottle crown liners, food jar sealing rings and "safe teething" vinyl toys. Compare the cost of efficient CITROFLEX A-4 with other F.&D.A. accepted vinyl plasticizers.

Besides A-2 and A-4, the Pfizer CITROFLEX line includes CITROFLEX 2 (Triethyl Citrate), CITROFLEX 4 (Tributyl Citrate) and CITROFLEX A-8 (Acetyl Tri-2-Ethylhexyl Citrate). Check into the Pfizer CITROFLEX plasticizers today. Mail the coupon below.

\*CITROFLEX is a trademark of Chas. Pfizer & Co., Inc.





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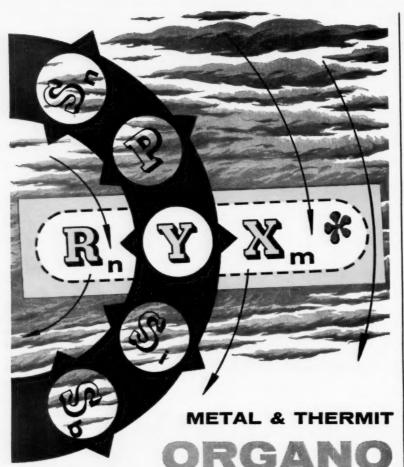
Name		
Position		 

Address

City\_\_\_\_Zone\_\_\_State\_\_\_

W

Branch Offices: Chicago, III.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.



\*R<sub>n</sub>YX<sub>m</sub>—In this formula R may be alkyl or aryl; Y represents the metallic element, and X an electronegative group such as halogen, oxygen in substituted groups of the alkoxide, acid radical or hydroxide type, or electronegative sulfur-containing groups. n+m must equal valence of Y.

Metal & Thermit has developed a greater variety of organo-metallics for commercial use than any other single company. The world's foremost producer of organotins, Metal & Thermit now offers an expanded line of compounds including those of phosphorous, antimony and silicon. A unique plant devoted exclusively to the production of these organo-metallics is in full operation in New Jersey. Scheduled for early 1958 completion is an even larger organo-metallic plant near the new chemical production center at Carrollton, Kentucky. Backing the entire expansion program is the Metal & Thermit research organization which includes personnel experienced in developing organo-metallics from all metals investigated to date.

> Inquiries on organo-metallic compounds of tin, antimony, phosphorous, silicon or other metals will receive our prompt attention.

TIN & TIN CHEMICALS CERAMIC MATERIALS ORGANIC COATINGS WELDING SUPPLIES PLATING MATERIALS METALS AND ALLOYS HEAVY METAL SCRAP

# METAL & THERMIT CORPORATION

GENERAL OFFICES: RAHWAY, NEW JERSEY

METAL & THERMIT-UNITED CHROMIUM OF CANADA, LIMITED . REXDALE, ONT.

#### ADMINISTRATION

#### LEGAL

Battle Over Gas Controls: Texascarrying the banner of the advocates of state control over supplies and prices of natural gas-appears to have won the latest round in the lengthy battle that will determine whether the federal government or the states will control this valuable resource.

One already apparent effect of the battle: when plant operations are based on natural gas, chemical process management now seems to favor locating new plants within states where gas supplies are produced (CW, Jan. 26, p. 36).

In the latest development, the Third Court of Civil Appeals in Austin has killed an injunction issued last January blocking enforcement of a Texas Railroad Commission order requiring Permian Basin Pipeline Co. to take and process-ratably-gas from all producers in the Puckett (Ellenburger) field in Pecos County.

# IDEAS

Industrial Health Programs: Conflicting opinions on whether health examinations for company executives should be compulsory or optional are revealed in an American Management Assn. survey of 447 large and mediumsized concerns. Among the 56 companies that require their executives to take the examinations, the feeling is that under the optional policy, "the man who's afraid the findings may be serious will stay away. Reason: he's afraid it will get back to management." Company physicians for the 40 firms where health examinations are entirely voluntary say that the compulsory plan is self-defeating-"it makes men feel like guinea pigs and they're less likely to be frank with the doctor or to heed his findings."

Diagnosing Problem Workers: Supervisors should make greater use of company physicians in dealing with "problem workers," says Dr. John Thorpe of Esso Standard Oil Co. At this week's meeting (in Philadelphia) of the American Petroleum Institute's division of refining, Thorpe called on supervisors to get help from staff physicians on recognition of such employees, identification of underlying causes, constructive action and avoidance of aggravation.

# The Chemical Industry can find the things it needs in the Land of Plenty

#### RAW MATERIALS



Vast deposits of the world's finest all-purpose Bituminous Coal. Limestone in abundance ... easy to mine or quarry ... over 98 per cent pure calcium carbonate! Dolomites, manganese, silica, clay, brines and other natural resources.



#### DEPENDABLE WORKERS

One of this territory's greatest assets is its dependable workers. In some locations there's a sizeable surplus of both male and female workers. These people, skilled in many trades, are adaptable to diverse manufacturing activities.

#### POWER



Power availability exceeds existing demands. Electric utilities serving the Land of Plenty have a total installed generating capacity of more than 19,857,155 kilowatts... and there's even more power on the way with the construction of new generating and transmission facilities.



#### WATER

U. S. Weather Bureau figures show that the average annual rainfall of the six states served by the N. & W. is 40-45 inches, about 30 per cent above the national average. Along the many rivers serving the states can be found excellent plant sites, affording a ready source of industrial water.

#### MARKETS



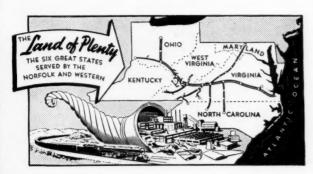
The Land of Plenty is strategically located in relation to major consumer and industrial markets of the U. S. It also provides convenient access to world markets through the Port of Norfolk on famed Hampton Roads, where the Norfolk and Western's modern facilities and services provide for the efficient handling of export-import commodities.



#### **TRANSPORTATION**

Fast, efficient rail transportation is furnished by the Norfolk and Western. The N&W system, linking the Atlantic Seaboard with the Middle West, provides convenient connections in every direction through strategically located interchange points.

The chemical plant that's properly located has a permanent operating advantage.

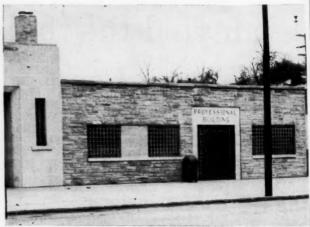


Write, Wire or Call-

L. E. Ward, Jr., Manager industrial and Agricultural Dept. Drawer CW-761 (Phone Diamond 4-1451, Ext. 474) Norfolk and Western Railway Roanoke, Virginia

Horpolkand Westerne





BUILDING BOOM CONTINUES: New high school, professional offices highlight \$10-million spurt as . . .

#### **Process Plants Convert Local Critics**

The industrial diplomacy used by the chemical industry in two small western Michigan towns which have seen a \$10-million construction boom, provides a case study for use whenever chemical process management runs into local opposition to plant construction in a nonindustrial area.

People in Whitehall and Montague—even though they hadn't enjoyed a period of solid prosperity for more than 20 years—were extremely dubious about the coming to their quiet community of three big chemical plants: Hooker Electrochemical, which

began production in 1954, Du Pont, and Union Carbide's Linde Co. division. The latter two went into production this past winter.

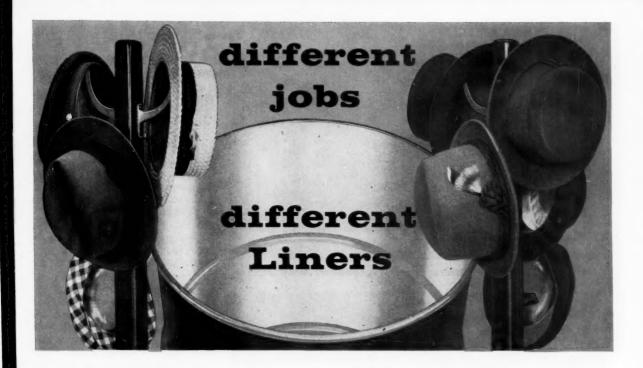
Montague and Whitehall had been at the hub of a big forestry industry between 1850 and 1900. After the lumbering era ended, the two towns gained a new livelihood as vacation spots. Located on five-mile-long White Lake between Manistee National Forest and Lake Michigan, Montague and Whitehall flourished until the depression of the 1930s sat down hard on the tourist trade.

Wedded to the Woods: Nevertheless, many of the townsfolk—including those who operated tourist cottages or had other material interests in the tourist trade—argued that their community shouldn't get involved in anything that might damage its reputation as a haven for outdoorsmen. These were the people who were most upset back in 1951 when word got out that Hooker—attracted by the salt beds that underlie much of Michigan and southern Ontario—was looking for a plant site in that vicinity.

Their faction went into battle for-



AND STILL A HOUSING SHORTAGE: Going up each year, 180 new homes in a 2-town community,



#### and SSIRCO offers you all kinds

ssirco produces high quality drums with many types of linings for a variety of chemical, foodstuff and petroleum products. In the modern Container Division plant in Birmingham all types of high bake phenolic linings, as well as clear, pigmented, or other types required for special uses, are applied. More and more manufacturers with plants in the South are turning to ssirco special-lined drums to ship or store their products.

ssirco steel containers are made from highgrade hot or cold-rolled steel and are built to take rough treatment almost indefinitely without seepage or leakage. Specific quality requirements are handled almost as routine, with delivery going out on schedule. All drums undergo two rigid leak tests as well as paint thickness tests for both the interiors and exteriors. Specification quality is met accurately every time.

When you need special casings or exceptional service, call ssirco. Or if you would like to have more details now, we shall be glad to supply them.



#### METAL CONTAINER DIVISION SOUTHERN STATES IRON ROOFING COMPANY

SINCE 1914

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NEW MOTEL: Business visitors swarm, vacationers keep coming.



MORE STORES, MORE AUTOS: Some help on parking problem.

mation when Hooker stated that the proposed plant would need water at the rate of 8.5 million gal./day; that it would draw water from White Lake and discharge plant waste into that fisherman's sanctuary; and that the plant effluent—though its bacteria and total solids content would be low—would contain traces of chlorine, so-dium sulfate and sodium chloride.

The situation called for industrial diplomacy of a high order. Here's how Hooker management met the challenge:

Polite Persuasion: First, Hooker convinced the Michigan Department of Economic Development that it was sincere in pledging not to pollute the lake; and MDED relayed this message to the public. In addition, the agency undertook the difficult mission of educating residents to show them that the proposed chlorine-caustic plant—despite that formidable-sounding description—would not menace the area's wildlife. Also, MDED assured

the citizenry that the state's Water Resources Commission would make periodic inspection to make sure that the chemical plant was complying with regulations.

Next, Hooker politely but firmly met the opposition head-on by holding a public meeting to discuss the facts and figures. Hooker spokesmen assured their prospective neighbors that the plant effluent would never be more than about 15 C warmer than the lake's summer water temperature; that it would not deplete the dissolved oxygen needed for the lake's plant and animal life; and that it would pass through a 300x400 ft. settling pond for removal of solids before flowing into the lake.

On top of all this, Hooker invited three community leaders—two newspaper editors and a banker—to visit the company's main plant at Niagara Falls, N.Y. Impressed by what they saw there, the trio returned to Michigan and reassured fellow townspeople.

Path Clearing Operation: With nearly all residents persuaded that the new chemical works would be an asset and not the community's doom, Hooker went ahead and built its \$15-million plant. Operation of this plant to the satisfaction of both the company and the community smoothed the path for construction of Du Pont's \$15-million neoprene plant and Linde's \$3-million acetylene unit.

Together, these three plants have created more than 500 new jobs in the community, with these effects:

- Population of the two towns has increased from 3,400 in 1950 to nearly 5,000; and expectations are that the total will reach 10,000 within 10 years.
- Construction is booming. Each town has built a new high school, and each is planning a new city hall. Over the past five years, new homes have been built at the average rate of 60/year in the Whitehall area and 120/year in Montague and vicinity.
- Property values are soaring. Lots near Whitehall that sold for \$400 apiece in 1953 now are selling for \$1,500 and up.
- Local business is thriving and growing. Some of the larger firms, like Misco Precision Casting Co. (Whitehall), have undergone major expansions; circulation of the weekly "Montague Observer" has jumped from 500 to 900; and new shops and stores have been springing up in both towns.
- Whitehall and Montague—formerly rivals in the tourist trade—are now working together in harmony. Last fall, they jointly staged a "Salute to Industry" meeting to welcome the chemical companies; and now they've bought a 12-acre site for a proposed \$600,000 community hospital to serve both towns.

Thus the new chemical plants have been absorbed into the social and economic life of this two-town community. There are still problems—not enough housing, not enough parking space, heavier traffic, crowded school rooms—but townspeople now accept these problems as part of their community's new opportunity for civic development. Their changed attitude, plus their community's changed conditions, could serve as a persuasive example wherever process industry expansion plans seem threatened by local distrust.

For industrial finish formulation...

## SHELL AROMATIC SOLVENTS

with wide variety of evaporation ranges

#### SHELL TOLUENE

. . . for applications where very fast evaporation and high solvency are required.

#### SHELL XYLENE

... has an exceptionally narrow distillation range, is slower drying than toluene.

#### SHELL CYCLO-SOL 53

... an excellent solvent with higher flash point and slower evaporation than xylene. Recommended for bake finishes and flow coating.

#### SHELL TS-28 SOLVENT

... a still slower drying aromatic concentrate of medium high solvency. Recommended for bake finishes and flow coating.

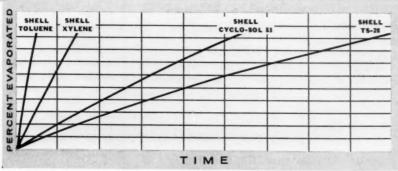


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Typical properties are given in the booklet shown. Write for a copy.

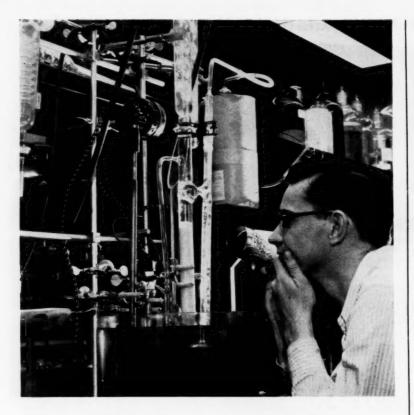
These Shell solvents cover a very wide evaporation range. Their individual characteristics satisfy specific requirements in a great variety of formulations.



#### SHELL OIL COMPANY

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#### COMPATIBILITY

#### ... in phenolic resins

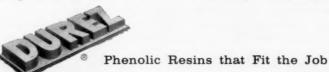
Their physical and thermal properties are not the only useful attributes of Durez phenolic resins. They also exhibit chemical characteristics that make them valuable in an interesting diversity of end-products.

In the compounding of nitrile rubber stocks, for example, the compatibility of certain resins with the rubber contributes to vulcanization with very substantial gains in strength, abrasion resistance, and resistance to attack by oil and chemicals. In another field the compatibility of Durez terpene phenolics with vegetable and synthetic waxes improves the performance-cost ratio of emul-

sion finishes. Brake linings and various industrial components serve better and longer because the resins in them are unaffected by oil and grease.

These and other characteristics make Durez phenolic resins useful as impregnants, bonds, coatings, and laminating agents. Their applications range from shell molds for metal castings to dense, strong board manufactured out of wood particles.

Can you use the mechanical strength of phenolic resins, their self-insulating properties and resistance to humidity, heat and cold? Our long experience in research and production is at your service.



#### DUREZ PLASTICS DIVISION

HOOKER ELECTROCHEMICAL COMPANY 905 Walck Road, North Tonawanda, N. Y.



Export Agent: Omni Products Corp., 460 Fourth Avenue, New York 16, New York



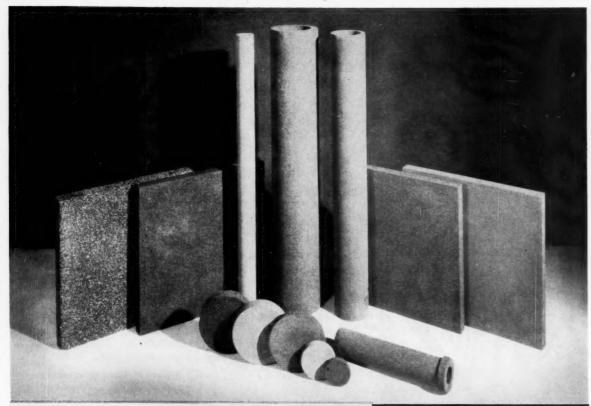
PERRY: Higher wages call for higher productivity.

#### LABOR

Higher Productivity Asked: In approving a two-year agreement calling for an over-all wage increase of  $8\frac{1}{2}\%$ , President Eugene Perry of National Vulcanized Fibre Co. (Wilmington, Del.) is stressing process management's current concern about wage-productivity relationships. Pointing out the sizable obligations his company is incurring, Perry has told employees at the company's four plants in Delaware and Pennsylvania that "increased productivity, improved methods and greater efficiency are essential to meet the higher benefits."

Unions Slip in Polls: During the fiscal year in which the AFL and CIO merged to form a larger and stronger federation, labor unions had their poorest record at the polls. Latest annual report by the National Labor Relations Board, published last week, shows that unions won 65% of NLRB certification elections.

In process industries, results of three recent elections for bargaining rights: at New Martinsville, W. Va., Mobay Chemical employees voted 72 to 34 against District 50, United Mine Workers; at Delawanna, N.J., office employees of Givaudan Corp. voted 14 to 10 in favor of Oil. Chemical & Atomic Workers (AFL-CIO); and at DeQueen, Ark., employees of Dierks Forests' wood processing plant rejected International Chemical Workers Union (AFL-CIO) by 2- to 1.



Norton ALUNDUM porous tubes and plates made by a controlled structure process. Available in a range of sizes and degrees of permeability for filtration, aeration and diffusion.

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Specify ALUNDUM porous media — tubes and plates — engineered and prescribed to give you better service, save your time and cut costs. Contact your local Norton Representative or write direct for descriptive literature to Norton Company, Refractories Division, 564 New Bond Street, Worcester 6, Massachusetts.

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#### ADMINISTRATION

#### KEY CHANGES

**John M. Olin,** to financial and operating policy committee chairman; **Thomas S. Nichols,** to board chairman; **Stanley de J. Osborne,** to president; and **John W. Hanes,** to financial consultant; all of Olin Mathieson Chemical Corp. (CW, May 11, p. 24).

H. Stanley Lawton, to vice-president in charge of sales and market development, Michigan Chemical Corp. (St. Louis, Mich.).

A. C. Mackey, to vice-president and sales manager, Osco Chemical Co., industrial and textile chemicals manufacturers (Atlanta, Ga.).

C. C. Carroll, to research coordinator, United States Radium Corp. (Morristown, N.J.).

**J. F. Scott,** to vice-president, Perolin Co., water treating compounds, oil additives and cleaning chemicals manufacturers (New York).

**Robert F. Lane,** to executive vicepresident, Fischer & Porter Co. (Hatboro, Pa.).

John Henry Griffin, to vice-president in charge of sales; Louis Musicant, to vice-president in charge of chemical research and production; and Isidor Schulz, to director of engineering; Crystals, Inc. (Westwood, N.J.).

Hermann K. Internan, to president, Electro Metallurgical Co., division of Union Carbide Corp.

Mortimer W. Brenner, to vice-president, Schwartz Laboratories, (Mt. Vernon, N.Y.).

**E. M. Kipp,** to director of research, Foote Mineral Co.

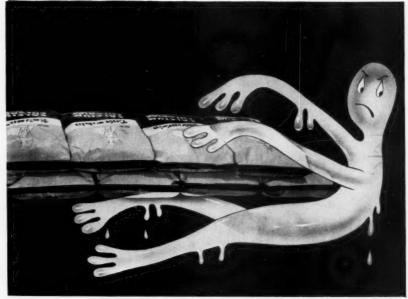
Leonard F. Beckers, to controller, Crown Zellerbach Corp.

#### CONSULTANTS

John B. Calkin, to president; George T. Bayley, to executive vice-president and treasurer; Robert Frank, to vice-president in charge of marketing and economic research; John L. Parsons, to vice-president in charge of pulp and paper; Winfield I. McNeill, to vice-president in charge of business services; Willard R. Crandall, to coordinator of laboratories; and Fred H. Posser, to coordinator of mechanical design and development; all of Calkin & Bayley, Inc., newly formed firm of consultants (New York).

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Sneak-thief dampness steals profits



Just a little water seepage in ship's hold . . . just a little moisture on the floor of a freight car could mean a costly loss in the shipment of chemicals.

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Keeps dampness where it belongs. Strong, inexpensive barrier paper—a Fulton exclusive—is easy to use. One man can lay a strip in a few seconds. Also avoids costly weatherproofing of warehouse areas. To protect open shipment against rain, snow and hail, cover with this special Fulton paper and seal edges.

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Convair's designing and engineering of the HUSTLER called for performance standards heretofore unknown. Many components and concepts had to be developed for the first time. For instance, extreme operating conditions made it essential to develop an entirely new fluid for the B-58's hydraulic system. Here Oronite's research met the challenge by submitting a product and making it available in commercial quantities.

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**EFFICIENT** COLLECTION?

Kentile, Inc., found a Dracco Multi-Bag Filter to be the ideal solution to air pollution problems created by an inadequate cyclone-type collector. Filter collects 1/2-ton of dust daily from processing of Kentile Cork Tile.

If your dust is being exhausted to the atmosphere, you may be wasting valuable materials . . . or violating air pollution ordinances.

But if it's being collected by a Dracco Multi-Bag Filter, you can breathe easy. Dracco Filters collect 991/2-100% of all dust particles and exhaust only clean air with no visible dust to the atmosphere.

Kentile, Inc., Brooklyn (N. Y.) installed a Dracco Multi-Bag Filter to avoid trouble with city officials. An old-style cyclone-type collector was being used to collect dust from cutting, slitting, grinding and finishing operations in the production of Kentile Cork Tile for walls and floors. Larger particles were being trapped, but fine dust-over half-a-ton a day-was escaping. By installing a Dracco Filter engineered to exact job requirements, Kentile now prevents air pollution. Dusty air is carried from the cyclone through a large pipeline into the heart of the filter, collected in the hoppers and bags, then automatically discharged for convenient disposal.

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Bulletin 800 is Dracco's 40-page catalog on dust control and recovery. Contains detailed facts and figures on all dust control equipment. For your copy, write Dracco today.

May 18, 1957 . Chemical Week

A P C C airstream conveyors dust control equipment



Synonymous with high overhead costs, reduced efficiency in plant and office, towering stacks of paperwork are a challenge to economyminded management.

by Robert A. Shiff



# Paperwork Control Can Save You Plenty

When it comes to uncovering ways to pare high operating costs, most chemical executives probably need look no further than the nearest filing cabinets. Filled to capacity in company after company, they represent profits, space and efficiency sacrificed to poor recordsmanagement methods. Acres of filing equipment crowd out valuable and otherwise useful areas. And inefficient

records management makes for many man-hours spent in duplicating efforts, searching for buried answers.

In contrast, sound handling of records tends to cut overhead costs, boost operating efficiencies and hike over-all profits.

In the past 10 years, the chemical process industries have increased their output from \$37.6 billion in

# the 500 plus molecular weight sodium petroleum sulfonate

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Immediate benefit to you of Bryton's enlarged capacity is the increased availability of Sherosope-T. In addition to Sherosope-T, Bryton\* can profitably and promptly supply you with oil-soluble sulfonates for many other industrial uses. These are prepared as sodium, calcium, barium, and ammonium salts. Sodium sulfonates are offered to you in a wide range of molecular weights. Consequently, you are permitted much greater latitude in selection and utilization.

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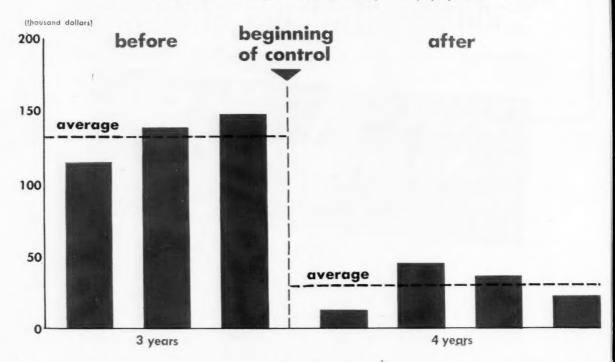
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€ 1957, Continental Oil Company

#### IMPROVEMENT CUTS COSTS

How one large chemical company reduced filing equipment expenditures from an average \$132,000/year to \$28,000/year by paperwork control.





#### CW Report

1947 to an estimated \$76 billion this year. With this 102% increase has come a multibillion-dollar outlay for process equipment, installed primarily to cut production overhead costs to the bone, boost plant efficiencies.

By and large, though, chemical management has passed up many ways of lowering nonproduction overhead in areas related to paperwork control, have tried to further minimize production overhead costs instead. Reason: to most executives, paperwork costs seem less tangible and tougher to pinpoint than seemingly easier-to-measure production costs. What's more, management is generally unaware of the sizable savings—not only in dollars and cents but also in time and efficiency—that well-planned paperwork methods can effect.

By upgrading paperwork methods, benefits are passed on down the organization line to plant levels, to production supervisors, to foremen and workers. That's especially important in view of today's highly automated plant operations. Companies can't afford to have them stymied by a welter of needless forms and paperwork.

Sound paperwork control is just as important in safeguarding research and development expenditures. In chemical industry, research and development investments are already high and should not be further increased by additional costs imposed by slipshod records handling. Keeping research files haphazardly or using handwritten notebooks as the sole source of experimental data defeats the aims of million-dollar research and development outlays.

When it comes to attacking the paperwork problem broadside, chemical firms are in a particularly vulnerable spot. Most administrators would hesitate to sanction the discarding of stored laboratory data, pilotplant records, production records and

volumes of forms and reports on marketing chemical products over years.

Management often forgets, however, that in seeking information from records it is not after original records themselves but, rather, information contained therein. The emphasis, therefore, should be on obtaining data rather than on chasing down original pieces of paper. Very often, summary data can replace records that have outlived their usefulness, still provide the required information.

Added to the volume of corporate records is the ever-growing flood of current paperwork, an integral part of researching, developing, producing and selling new and rapidly changing chemical products.

To "solve" today's mounting paper and records snarl, most chemical executives grudgingly increase their clerical staffs according to needs, add more filing storage space (new filing cabinets or a hall of records) and continue to bemoan the fact that paperwork costs are high, that office "details" keep them pinned to their desks.

#### **ANNOUNCING**

# THE 1957 GLYCERINE RESEARCH AWARDS

FIRST AWARD .... \$1,000 SECOND AWARD .... 300 THIRD AWARD ..... 200

These annual awards were established in 1952 to recognize research leading to new and improved applications of glycerine and glycerine derivatives. Award winning work may deal with the chemical, physical or physiological properties of these materials; with actual or projected uses; or with scientific principles likely to stimulate future applications. Originality in extending the usefulness of glycerine into new fields will receive special consideration.

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#### BASIS OF ENTRY

These awards are open to any individual in the United States or Canada engaged in research, either in industry or with government or educational institutions. Entries by research teams of two or three associates are eligible. Persons connected with member companies of the Glycerine Division, Association of American Soap & Glycerine Producers, Inc., or laboratories

which they employ are not eligible.

First consideration will be given to work which has come to a clear-cut point of accomplishment during the current year; but work carried on in previous years, the significance of which has been confirmed by commercial application in 1957, also will be eligible.

Entries will be judged by a committee of three persons of outstanding reputation and scientific background, having no connection with the Association or its members.

#### **METHOD OF NOMINATION**

Nominations must be made on the official entry blank, which may be obtained by writing to: Awards Committee, Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

All nominations for the 1957 awards must be received by November 1, 1957 to be eligible.

#### Honor Role of Glycerine Research Award Winners

#### 1952

First	Dr. Ivan W. Brown, Jr. Duke University School of Medicine and Rev. Basile J. Luyet
	Institute of Biophysics, St. Louis University
Second	Dr. Raymond Reiser and Dr. Hermann Schlenk

3000110	Texas Agricultural Experiment Station
Third	Research team at Southern Regional Research
	Laboratory headed by Dr. Reuben O. Feuge

#### 1953

FIFSE	University of Toronto	
Second	Dr. Lewis I. Gidez Brookhaven National Laboratory and Dr. Manfred L. Karnovsky Harvard Medical School	
Third	Albert C. Nuessie	

#### Rohm & Haas and Russell F. Crawford, Jr. Sharon Hill, Pa.

#### 1954

First	Prof. Robert K. Summerbell
	Northwestern University and Dr. James R. Stephens
	American Cyanamid Co.
Cocond	Two recearch teams.

Second	Two research teams: Dr. Robert W. Swick and Akira Kakao of Argonne National Laboratory and
	Dr. Harland G. Wood and Dr. Per Schambye of Western Reserve University

#### Third Dr. Henry A. Sloviter University of Pennsylvania

#### First Dr. Reed A. Gray Merck & Co.

Second	Dr. Eugene P. Kennedy University of Chicago
Third	Dr. Karl H. Lauer University of Alabama

#### 1956

First	Dr. Herbert J. Dutton U.S. Dept. of Agriculture
Second	Dr. Donald Zilversmit University of Tennessee
Third	Dr. Stanley G. Knight University of Wisconsin

#### SOUND RECORDS-HANDLING PRACTICE

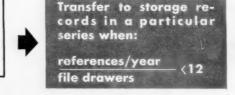
Measure your paperwork against these recommended standards:

- 1 cu. ft. of records/company employee

#### OFFICE

5 cu. ft. of records/whitecollar worker

10 cu. ft. of records/whitecollar worker in accounting and purchasing



How much is a cubic foot of records?

One full letter-size file drawer equals 1.5 cu. ft. of records
One full legal-size file drawer equals 2 cu. ft. of records



Less often they attack the problem at its source—lack of control over creation of paperwork and its use in the company.

Back in 1947, the chemical and allied products segment of the chemical process industries had roughly three production workers for every worker in a nonproduction slot. Ten years later, despite widening use of numerous automatic and labor-saving devices in areas outside production, that ratio has continued to drop until now it's under two production workers for every one in nonproduction.

Conclusions: office "automation" isn't the entire answer to paperwork control. New electronic devices introduced at too fast a clip can actually accelerate records creation, replace low-cost personnel only.

There's increasing evidence, however, that management men are growing steadily more aware of the need to ease paperwork pressure without resorting to high-cost machines. A recent survey on office-improvement procedures confirms the idea that companies regard office mechanization as only a partial answer to the paperwork tangle. Almost 70% of 138 responding companies—many of them chemical—reported that improved paperwork methods are more effective than machines in reducing mounting nonproduction overhead.

For them the electronic "gimmick" approach fell short of expectations, whereas the more realistic (and far cheaper) solution of the problem of high paperwork costs—records management control—was proving itself.

U.S. industry spends billions of dollars yearly to create "records"—an omnibus term used to describe all paperwork, books, maps, drawings and filmed documents generated by business. The chemical industry, like all the rest, absorbs its yearly share of costs for managing (or mismanaging, as the case may be) this enormous paperwork output.

How much of that load are you carrying? Can anything be done to cut your paperwork costs? To answer these important questions, consider the subject in perspective, study some chemical company cases where problems were recognized and solved, then decide whether or not there's room for improvment in your particular company.

#### STORAGE

5 cu. ft. of records/whitecollar worker

10 cu. ft. of records/whitecollar worker in accounting and purchasing

Minimum ratio of total volume of records in storage to total storage area equals 3.5 cu. ft./sq. ft.

Stored inactive records should be referred to no more frequently than 1 or 2 times/year/cu. ft.

#### Have the Symptoms?

Because paperwork management policies are important enough to affect operating efficiencies and profits throughout a company organization, they must be kept under top management purview.

More often than not, however, top management is unaware that a records problem exists in the company. Reason: executives rarely come in contact with details of records handling or ask for cost figures on paperwork operations. This suggests a need at top levels to recognize the more familiar symptoms of weak records control. Six major troublespots are:

1—Shortage of records storage space, steady purchase of new filing equipment increasing nonproduction overhead. (See case studies on Du Pont and M. W. Kellogg, p. 56.)

2—Plant and office backlogs; delays caused by time-consuming and duplicated paperwork procedures. (See case study on Oneita, p. 56.)

3—Hard-to-find research records and data. (See case study on Cutter, p. 58).

4—Absence of age limits on filed material. (See case studies on International Minerals & Chemical, and on a large Midwestern chemical company, p. 58.)

# DOSE

To lower costs —
find the surest source
of raw materials

#### **PHOSPHATES**

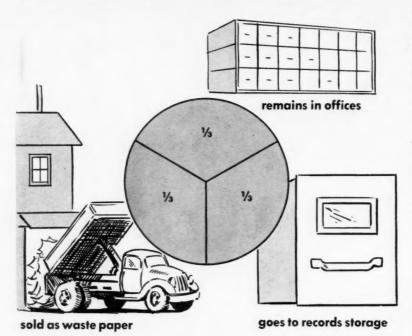
FROM MONSANTO, WORLD'S LARGEST PRODUCER OF ELEMENTAL PHOSPHORUS

SODIUM PHOSPHATES - CALCIUM PHOSPHATES - AMMONIUM PHOSPHATES - POTASSIUM PHOSPHATES - PHOSPHORIC ACID



#### THREE-WAY SPLIT

Here's what usually happens to a company's store of paperwork when records control is applied:





#### CW Report

5—Unselective usage of office machines; little or no regard for office machine needs or costs. (See case study on Harshaw, p. 60.)

6—Lack of policy on vital records protection. (See case study on Dow, p. 60.)

Faulty records-housekeeping manifests itself in many other ways. But for most purposes, the six trouble-spots mentioned above may be regarded as major danger signals of uncontrolled paperwork.

If allowed to go unchecked, these conditions eventually paralyze office work, contribute to production backlogs, develop poor customer relations and keep overhead costs unduly high.

#### Take the Test

What basic features of a top-notch program can be employed to "yard-stick" the effectiveness of records systems? In general, a sound paperwork program should insure management control over:

- Records creation—provide systematic control over creation of new or revised forms, reports and correspondence; eliminate duplicate records and procedures; combine, simplify and standardize important forms and reports.
- Records processing provide workable paperwork procedures; evaluate effectiveness of microfilm and other business machines; give files and records a classification pattern to speed data processing; reduce clerical errors through quality control.
- Records preservation or destruction—provide a "cradle to grave" timetable for retaining or disposing of records; solve records storage space problems; identify and protect records vital to company security and growth; preserve key documents for manage-

ment's use in seeking precedents or for company histories.

Recently, the U.S. Dept. of Commerce underscored the importance of one of these areas—preserving vital records—when it initiated its "continuity of management" plan—a recommended program to aid companies to: replace key executives who might be killed during atomic attack; disperse production facilities; and preserve vital corporate records. Many chemical industry leaders have already announced their intentions of implementing this plan.

While the government's program has sparked an industry-wide awareness of the importance of adequate records protection, control over records creation and processing is equally worthy of management's careful attention. Chances are that if a company's policies are weak in any one of the three areas, it's weak all along the line.

#### Who Does the Job?

When it comes to the mechanics of solving paperwork problems, larger chemical companies are often at an advantage. Usually they have skilled analysts on call.

Smaller firms lacking this resource may have staff personnel available with a "flair"—if not the technical training—to develop new approaches to records handling.

On the other hand, both large and small firms often find it profitable to call in qualified help to do the entire job or to supplement their own personnel.

Consultant analysts are useful in: (1) Getting a program aimed in the right direction.

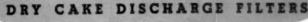
(2) Starting company personnel thinking in terms of ever-improving records systems.

(3) Overcoming resistance to change on the part of company employees.

(4) Training company personnel in methods that may later be applied to other paperwork problems.

But whether or not management decides to "go it alone" or call in help, the records analyst doing the job begins by taking a close look at the company's over-all paperwork operations. He takes measurements that reveal, among other things: volume of records; space and equipment costs for records handling; microfilm costs; rental values for rec-







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Built for clean, quick cake recovery where (1) local ordinances prohibit discharge of the waste cake into the sewage system, and (2) where further processing of the filter cake is required. Enzinger craftsmen-built filters provide maximum filtration efficiency and complete ease of operation.

Enzinger filters are built with either conventional hand wheel or quick-opening top and bottom closures. Air or gas inlet speeds up drying. The cake can be dumped into a hopper or conveyor without removing the leaves from the filter.

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#### CW Report

ords storage space; troublespot areas where paperwork backlogs occur; procedures that are causing customer complaints; frequency of clerical errors; unnecessarily long retention schedules for records.

Out of such a paperwork audit comes a blueprint for a workable paperwork improvement program in any or all three of the basic areas—records creation, record processing and maintenance, records preservation or destruction. The best place to begin the upgrading program is in an area where the most benefit can be achieved quickly and with minimum cost.

The audit approach leaves ample room for creating records procedures that fit a company's individual needs. Caution: one of the important pitfalls that management must avoid in improving paperwork is the acceptance of a stock solution.

A common, stereotyped solution is unselective use of microfilm. When management adopts a microfilming program without measuring use against actual needs or costs, it is courting paperwork troubles and potential wastes. Using microfilm indiscriminately, in fact, tends to perpetuate shaky paperwork operations.

This doesn't mean microfilm hasn't a place in records-handling. It is being used more judiciously today to speed administrative processing of information and to eliminate many manual-copying operations and, to a lesser extent, to save space and protect vital records.

#### Who Approves Changes?

Too often, the authority for approving a better records-handling program is fixed at the wrong corporate level. A department head or supervisor who is authorized to approve equipment purchases up to, say, \$250, obviously should not be granted authority to decide on the merits of a suggested records improvement system that might save

the company as much as \$50,000/year. Why not?

At the department-head level, a supervisor's reasons for approval or rejection may be based more on incidental questions of personalities and/or subordinate opinion than on over-all knowledge of company overhead costs. Personnel at this level, in fact, should not be permitted to authorize use of any new forms until higher management has authorized their costs and evaluated their need.

Even higher up the management ladder, no top executive should be permitted to request one report after another without prior knowledge of report costs. Some companies, in fact, put such emphasis on control of these costs that they appoint a board of review to check yearly report costs.

What else can management do to help itself out of the paperwork morass? On the most elementary level, it can educate company personnel in work simplification procedures—institute programs to start employees thinking in terms of lowering paperwork expenditures and cutting down paperwork. Beside this, it can re-evaluate its records procedures with a view to isolating problem areas, then effect improvements.

Chemical company managers should realize that requests for dozens of reports and statistical information from various departments cost money—lots of it.

Company controllers, on the other hand, should be quick to translate clerical overhead costs into gross sales. If, for example, a company's return on gross sales is, say, 5%, it would take \$2,000 in sales to cover the purchase of a \$100 filing cabinet.

When chemical management begins reasoning along these lines—projecting paperwork costs onto a companywide scale—it will begin to realize the vital need to consider sound records management as part of the over-all executive function.



#### **Needed: Information, Not Paper**

At the other end of this telephone a busy executive seeks information from stored records. The above archivist (working in an up-to-date records storage center) relays the sought-after facts in a matter of minutes. The record leaves its storage box only long enough for the archivist to read the desired information into his telephone. When the record outlives its usefulness it will be destroyed.

#### Looking for

- \* Solvents for resins or polymers?
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# ETHYLENE CARBONATE PROPYLENE CARBONATE

Both of these carbonates are outstanding in their solvent properties for many classes of organic compounds which are difficult to dissolve. They are also miscible with many common solvents, including water. These properties suggest applications in selective or extraction solvents.

Carbamates are formed easily with ammonia and aliphatic amines, leading to many applications in resins, agricultural chemicals, plasticizers and other products.

When the use of ethylene oxide or propylene oxide is inconvenient, alkoxylations can be effected with the corresponding carbonates.

Propylene carbonate has a low viscosity at low temperatures and a high boiling point  $(242^{\circ}C.)$ , suggesting applications in hydraulic fluids and similar functional liquids.

Jefferson ethylene carbonate and propylene carbonate are available commercially in drum quantities, and samples will be sent on request. Write for the Jefferson technical bulletins on these carbonates to Jefferson Chemical Company, Inc., 1121 Walker Avenue, Houston 2, Texas.

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Essential Chemicals from Hydrocarbon Sources



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Glycols, Dichloride
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#### Now-

#### Consider Some Case Studies

You've read the arguments in favor of paperwork control, now see what happened in some typical case studies where chemical management recognized the need for control and took action to effect improvement.

#### Troublespot No. 1:

Shortage of storage space for records; steady purchase of new filing equipment; increasing nonproduction overhead.

#### Case study: E. I. du Pont de Nemours & Co., Inc. (Wilmington)

Four buildings in Du Pont's hall of records were so crammed with paperwork that the company planned to invest \$300,000 in a new building to further accommodate mounting paperwork. Before making the move, however, management okayed a paperwork study.

The audit disclosed that Du Pont's record buildings contained an estimated 280 million pieces of paper. It also revealed that a new building would be superfluous if: (1) new types of storage equipment were installed and (2) shorter records retention schedules were applied.

By checking the rate of reference to World War II records, for example, records analysts found that references were being made at the slow rate of one every year for each 576 cu. ft. of record volume.

Besides permitting maximum use of storage space, the over-all program aided Du Pont in tightening up records retention controls.

Results: a 132% increase in available record space; a 50% saving in records storage equipment; speedier office-to-storage records transfer and improved records access procedures.

#### Case study: M. W. Kellogg Co. (New York)

M. W. Kellogg was forced to resort to makeshift outdoor records storage at its plastics division in Jersey City. Admittedly, it was an expedient dictated by space needs when the company began manufacture of its new fluorinated plastic.

Realizing the seriousness of the situation, Kellogg management instituted a records control program. Age limits were set for more than 1,300 different kinds of records; makeshift storage was completely eliminated in favor of a low-cost records center that housed paperwork in one building instead of in four.

Results: 95% of the records temporarily stored—some 40 tons—were scrapped; 34% of all the company's records—133 tons—were destroyed; retention-time of office records was reduced 36%; 2,458 file drawers were released for future use.

#### Troublespot No. 2:

Plant and office backlogs; delays caused by time-consuming and duplicated paperwork procedures.

#### Case study: Oneita Knitting Mills (Andrews, S.C.)

Oneita, bulk user of dyes, found its automatic plant operations bogged down by cumbersome production forms and schedules. Company efforts to control paperwork were rigidly departmentalized;



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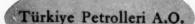
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plant operations were hamstrung by complex forms—orders confirmation, production scheduling, shipping and billing.

Six weeks after initiating a paperwork control program, the firm replaced eight separate forms and procedures with two basic ones. One took care of five different forms formerly needed, the other replaced three forms.

Results: production scheduling was speeded, work loads were evenly distributed; production and non-production overhead costs were cut.

#### Troublespot No. 3:

Hard-to-find research records and data.

#### Case study: Cutter Laboratories (Berkeley, Calif.)

CUTTER management figured that company researchers were wasting valuable man-hours by using unsystematically indexed reports, work papers and notebooks. Lack of control led to duplication of research effort and staggering time losses whenever researchers sought company experimental data.

Out of a paperwork overhaul came a new procedure that indexed experimental data, preserved research records and insured their access to authorized personnel. All inactive research records were sent to a newly designed records center, technical

files were appropriately cross-indexed. Research data publication within the company was restricted to a minimum number of report copies, distributed on a need-to-know basis. Routing and disposition was closely supervised.

Cutter created a central authority in the research department to clear and control withdrawal of all research material.

Results: wasteful expenditures of time and duplication of effort were reduced; vital research data was protected.

#### Troublespot No. 4:

Lack of age limits on filed material.

#### Case study: International Minerals & Chemicals Corp. (Chicago)

International faced an acute records storage problem. Stored paperwork volume had grown so huge that records were being shipped to company offices in New Mexico, where more space was available.

But a paperwork study revealed, for example, that some records representing 2,310 cu. ft. of paperwork volume were being referred to at a rate of only 32 references/year. Expressed another way, each one of 16 record boxes would be opened once every 24 years. For the most part, they should have been destroyed.

After paperwork evaluation was complete, IM&C installed a records control system. Results: 45% of all existing company records—some 47 tons of useless paper—were destroyed. This freed valuable space and filing equipment. More important, it cut overhead costs.

#### Case study: Midwest chemical company

WHEN mountains of stored paperwork became unmanageable, a Midwest chemical firm decided to apply records control as a way out of the tangle. Analysis revealed that an estimated 80 million pieces of paper were being stored in office file cabinets alone. In one file drawer, in fact, rocks were filed with the notation: "Rocks thrown through the windows during the strike of 1887." Records and paperwork were crammed in basements, closets, stair wells and ice houses.

First, the firm established a pilot improvement program. All records were analyzed with regard to legal requirements and usefulness. Obsolete records were junked and disposal schedules set.

When the firm reviewed the results of its program several years later, it reported a saving in space, equipment and clerical costs of some \$250,000. Afterward, a records-handling program was installed on a company-wide basis. Last year, the firm reported a total saving of more than \$150,000.





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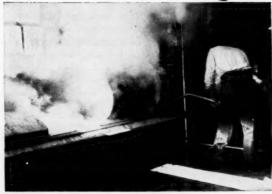
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#### Troublespot No. 5:

Unselective use of office machines; little or no regard for office machine needs or costs.

Case study: Harshaw Chemical Co. (Cleveland)

Harshaw Chemical operated with a costly microfilming program for records. Trouble was, microfilm was being employed unselectively, used for space-saving generally.

Unnecessary microfilming operations were eliminated, and a new records-handling program was installed. Records were assigned "cradle to grave" age limits, housed in what was formerly the microfilming room.

Results: \$14,000 was saved in microfilming costs; records storage space in office and basement was reduced by a total of 1,400 sq. ft.; 22 tons of useless paper were destroyed; office equipment costs were sharply reduced for three to five years after installation of the program.

#### Troublespot No. 6:

Lack of policy on vital records protection.

Case study: Dow Chemical Co. (Midland, Mich.)

Dow was generally satisfied with its existing paperwork program. Management was concerned, however, about lack of protection of vital records in event of disaster.

A records analysis revealed that one of the comcompany's most valuable assets—its production records—was virtually unprotected. Microfilming was being employed; yet, in cases of disaster, management questioned whether the total volume of microfilm records could be restored quickly.

Paperwork control tightened up the company's vital records protection procedures and set age

limits on other records. A separate storage area was assigned for original records storage to make all-important production know-how directly available to management should an emergency occur. This move alone halved microfilming costs—from \$15,000 to \$7,000/year.

Estimates showed that 15 tons of obsolete records could be destroyed. A retention program controlled the flow of records from office areas to low-cost storage. Instead of maintaining records in 14 separate areas, Dow consolidated them in one central location. Total estimated savings: \$55,000.

#### Meet the Author

Robert Shiff (M.A., '41, Columbia) is at once president and a director of both the National Records Management Council, Inc., a nonprofit organization, and Naremco Services, Inc., the council's newly formed, wholly owned subsidiary, which offers its services to companies that want "out" of the paperwork morass.

Shiff helped found the council in 1947, served previously as director of the U.S. Naval Records Management Center. Aside from his current duties at NRMC, he is adjunct professor of records management and archives administration at New York University's Graduate School of Business Administration.

Some of the big paperwork reorganization jobs he has directed were for Du Pont, Bethlehem Steel, United Aircraft, Chemical Corn Exchange Bank, Creole Petroleum, Scott Paper, M. W. Kellogg, the states of Michigan, Rhode Island, Illinois, and for New York City.



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#### SPECIALTIES



ECONOMICS LABS' OSBORN: He's sparked the company's recent . . .

#### Move For Home Markets

Ask the typical man on the street whether he's heard of Economics Laboratory, and he'll probably look at you with a puzzled stare. Ask him what Economics Laboratory's business is and, if you get an answer at all, it will probably concern economic research, or other "longhair" pursuits. This all points up a paradox about Economics Laboratory (St. Paul, Minn.). Its products are better identified in the public's mind than is the firm itself.

Few people outside the industry that know that the company that makes Electrosol and Finish dishwashing compounds is the same that makes Dip-It (a perborate dish-stain cleaner), Soilax (an all purpose heavy duty cleaner), Soil-Off (a liquid cleaner, formerly the property of S.O.S), Rinse-Dry (a rinse water conditioner) and Fun (a combination soap and detergent with low sudsing properties).

But like an iceberg, the part that meets the public eye is actually the smaller portion. It accounts for only 35% of the company sales dollar.

Providing some 55% of current

sales are industrial dishwashing compounds. Soil-A-Way, Super Soilax, and Soilmaster are for institutional mechanical dishwashers; Pan Dandy is for pots and pans; Tetrox is for manual dishwashing; and Rinse-Dry is a wetting agent added to rinse water to prevent spotting. The company is probably number-one seller of these products to the institutional field. It uses 275 salesmen to cover this market—one with sales figured at about \$45 million dollars a year.

The company also manufactures different types of mechanical equipment which dispense dry or liquid detergents into mechanical dishwashers during their operation. Such equipment, leased and sold to institutions, doesn't net the company much in the way of profit. But it's a good—and necessary—sales tool.

Growing fast is the company's interest in the dairy industry. The company manufactures and sells chemical detergents and dispensing equipment for use in plants, dairies and on farms. This activity is still growing: the company has a strong foothold in Minnesota and Wisconsin, is currently expanding its operations in Illinois, Iowa and Missouri.

Also helping boost overall sales is the compounding and packaging company does for other companies. Presently the company puts up Snowy Bleach for the Gold Seal Co., Sta-Flo and Sta-Puf for A. E. Staley and Rinse-Rite for Hotpoint.

Born in a Hotel: Economics Laboratory was organized in 1923 by Merritt J. Osborn (the firm's board chairman and director as well as father of E. B. Osborn, company president). The elder Osborn, who traveled as a pharmaceutical salesman for such firms as Parke, Davis and Eli Lilly, noticed that because rooms had to be closed off while upholstery and carpet were sent out and while painted surfaces were cleaned, hotels frequently lost revenue.

He reasoned that a good cleaner could make a profit; he set up Economics Laboratory—on paid-in capital of \$5000. The firm's first product: Absorbit, a carpet and upholstery cleaner. This was followed shortly by Soilax, useful for wall, paint, and linoleum cleaning. The products were sold through hardware and paint stores in bulk packages, were not merchandised for home use.

Soilax found a major use in the early types of automatic dishwashers, was adopted as the standard detergent for this purpose in 1925 by the Walker Dishwasher Co. Economics had that field (not a big one then) to itself until Calgon came along with Calgonite. The introduction, in '37, of Heavy Duty Soilax (which contained sodium tripolyphosphate) helped regain part of the business lost to Calgonite.

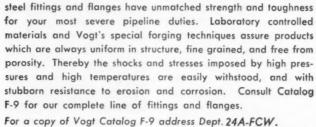
Economics has retained its interest in dishwashing compounds. With Electrosol (introduced in '46) and Finish ('53), it's probably the number one seller to the home dishwasher field. P & G's Cascade is probably the number one challenger, followed by Hagan Corp.'s Calgonite and Thanx, then Monsanto's dishwasher All.

Economics finds it can battle the giants in the dishwashing compound field because promotion costs are low. TV, for example, is not a factor here yet, neither are the big weekly maga-



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#### SPECIALTIES

zines. The important thing is to get makers of dishwashers to approve the detergents.

National Interests: The company has manufacturing plants in Chicago (where a new production unit is under construction, should be ready by July), Lyndhurst, N.J., and Santa Clara, Calif. All these plants make each of the firm's detergents. One exception: Soil-Off, which is made only in Glendale, Calif.

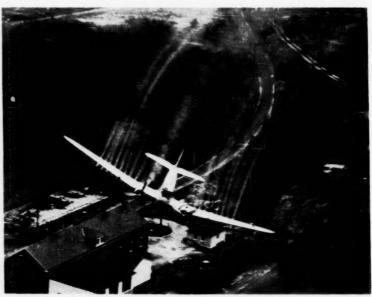
A plant in Dallas, Tex., produces Sta-Flo and Sta-Puf for contract sale to Staley. Equipment manufacture and research labs are in St. Paul, and executive offices are now in New York City.

Who's who: Heading the company is E. B. Osborn, who's been with Economics 29 years, served as its president for the past five. Somewhat unusual for a company the size of Economics is the high place given to women in the managerial hierarchy.

Serving as company secretary is Ida Koran. She was the first employee of the company, has been with Economics for 34 years. Rounding out the offices are Dr. J. L. Wilson, V.P. in charge of Research and Development, Paul R. Evans, VP of Consumer Package Sales and D. W. Devins, Treasurer.

**Triplets:** The company has three marketing divisions covering institutional, consumer and dairy fields. Evolution of these divisions in the past 10 years illustrates how the company has moved from a strictly industrial supplier to a consumer-oriented seller of specialty products.

The Institution Division was set up first. It marketed products beamed at such institutional chores as dishwashing and wall cleaning. A desire to cut the detergent waste resulting from restaurant operator's lack of knowledge of mechanical dishwashers put Economics into the manufacture



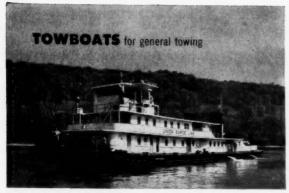
WIDE WORLD

#### DDT Sprayers Fly into a Controversy

THE \$5-MILLION PROGRAM of the U.S. Dept. of Agriculture to eradicate gypsy moths in eastern U.S. woodlands is running into heavy weather. Residents in Long Island areas being sprayed seek to halt the program. Their complaints: The planes fly too low; the insecticide (DDT, at 1 lb./acre) is a dangerous

poison; the insecticide is ineffective; constitutional rights of the citizenry are being ignored.

Rep. James Delaney (D., N.Y.), of Delaney Committee fame, is among those up in arms, says he'll protest to the USDA. Meantime USDA continues its spraying, hopes to finish 3 million acres by mid-June.

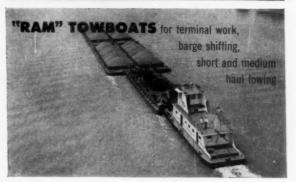












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#### SPECIALTIES

of controls and dispensing equipment.

The pre-war entry of Soilax into paint, hardware, and department stores and finally into grocery stores (post-war) marked the development of the Consumer Division. The firm soon began to produce consumer forms of its industrial products—first of these was Electrosol.

Fun, Dip-It and Soil-Off were also pushed through the consumer division by a staff of 60 full-time salesmen and 19 independent brokers. The division, with its contacts in the grocery field, also distributes products for other firms, e.g., Kiwi shoe polish.

The fast-growing Dairy Division, set up in '50, was an outgrowth of the industrial division, now functions autonomously.

Foreign sales haven't as yet been much of a factor—but they figure to be in the future. The company recently set up a Canadian subsidiary to handle growing sales there. Most of the production is supplied by Canadian manufacturers on a contract basis. In Europe the company has a 91%-owned Swedish subsidiary, Soilax Aktiebolag, which markets the products to Scandinavia.

Plenty to Grow on: Sales for '56 were \$15,498,774, and the prospects this year are for sales of \$17 million\*. But there's more to brighten the firm's future annual reports:

- The number of home dishwashers should push up to 10 million by '63, mean a potential market for 110 million lbs. of dry detergent.
- Growing acceptance of melamine dishware—now selling at \$70 million/year rate—is accelerating will provide a larger market for Dip-It stain-removing cleaner.
- The incorporation of automatic dispensers both on dishwashers and clothes washers will boost the demand for rinsing aids.
- Growing amalgamation of milk processors into "super" dairies should cut down on merchandising, distribution costs for dairy cleaners.

The company can obviously expect competition in those areas where the "Big Three" soapers dominate. Its general purpose detergent. Fun, for instance, is already bucking All, Dash, and Ad, and isn't figured as one of the brighter products in the firm's product galaxy. But Economics isn't worrying, figures competition is unavoidable if a firm is to grow.

\*Net sales in '47 were \$3.7 million.

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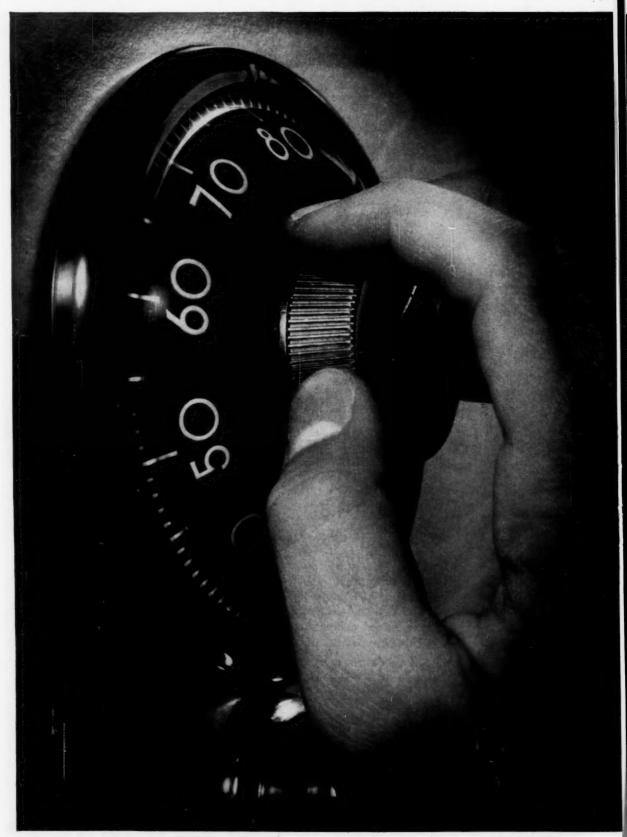
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#### How the Antifreeze Market Breaks Down

U. S. auto owners bought 107 million gal. of antifreeze solutions worth \$275 million in 1956

#### ETHYLENE GLYCOL

80% in gallons

84 million gal.

15% in quarts

5% in bulk

#### **METHANOL**

47% in gallons

23 million gal. 33% in bulk

20% in quarts

#### **Antifreeze Demand Slips**

A recent survey of U.S. motorists and fleet owners pegs 1956 antifreeze consumption at 107 million gal. a quantity worth \$275 million. Basing its estimates on manufacturers' reports thought to account for about 97% of total production of these compounds, the Chemical Specialties Manufacturers' Assn. finds consumption down about 2.8% from the '55 mark of 110 million gal.

As shown in the table above. nearly four out of five of the purchasers chose the permanent, or ethylene glycol solutions. Almost all of these are nationally advertised brands retailing for about \$3.25 per gallon. The remaining 21% (about 23 million gallons) of '56 sales were of the methanol-type product, which retails for about \$1.60 per gallon.

Packaging in sealed containers was somewhat more popular in '56 than in '55, according to the survey. In '56, 80% of the ethylene-glycol types were moved in gallon cans, about 15% in quart cans and the rest in bulk containers. On the lower-priced methanol products, about one-third was packaged in bulk containers, 47% in sealed gallons, and the remaining 20% in quarts.

The CSMA estimates were based on a survey conducted for it by Ernst & Ernst, a New York independent certified public accounting firm. Actual amounts covered in the survey (before they were projected by the CSMA to give an over-all total): 67,807,012 gal. of ethylene glycol, 15,040,528 gal. methanol.

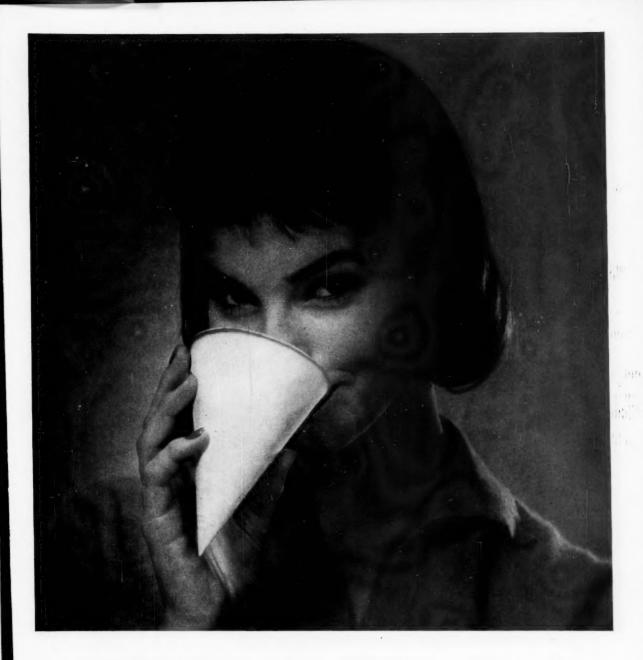
#### **FDA Fees Climb**

Beginning July 1, it will cost pharmaceutical manufacturers more—about 10%—to obtain certification for five antibiotic drugs and their dosage forms according to the Food and Drug Administration. New fee schedules are in the mails.

FDA offers these reasons for the increase: higher costs of labor, materials and equipment. The agency also pointed out that considerably more laboratory work is required for testing complex formulas containing three to five antibiotics than those containing only one or two.

Under the law, the antibiotics certification service is required to be self-supporting; FDA estimates that in 1957 fees under the old rates would amount to \$96,000 less than actual certification costs.

Affected by the new price schedule are formulas composed wholly or partly of penicillin, streptomycin, chlorotetracycline, chloramphenicol, or bacitracin, and their derivatives.



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The remarkable optical properties of TITANOX white pigments are most aptly illustrated by their use in paper. To increase brightness and opacity of wax papers . . . to increase legibility in printing papers by reducing show-through . . . to eliminate dull backgrounds in packaging stocks . . . or simply to give a bright new look to paper cups—TITANOX is your first choice in titanium dioxide white pigments.

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#### SPECIALTIES

#### The People's Choice

Dirty dishes bother men more than women, a dust repeller is standard equipment in the housewife's Utopia, and relatively few men pine for a hair restorer. These are some of the conclusions reached by an informal survey recently conducted by the Illinois members of the Manufacturing Chemists' Assn.

But the survey provides more than interesting comment; it also provides some new product ideas.

How It's Done: A battery of interviewers on Chicago street corners asked passers-by what new products they hoped the chemical industry would produce to combat disease, lighten household chores, improve clothing, fabrics and cosmetics. Here are some suggestions from the 281 interviewees:

- In the household category, 24% of the men queried thought that "something to make it easier to wash dishes" was needed. Only 6% of the women thought this very important. Women, on the other hand, indicated they would welcome a really effective dust and dirt repellent. Also some 13% of the women would like to have a wax that would clean and shine floors in one operation. Other products sought: sprinkle-and-rinse porcelain cleaners, long-lasting metal polishes, paints that change color.
- · Cosmetic makers, according to the survey, should concentrate on a lipstick that will prevent chapped lips and not smear. Eighteen-percent of the women request that product. Another 8% of the women want improved eye make-up-including "something to make eyes sparkle." A cosmetic to prevent wrinkles-or at least remove them-was hankered after by 10% of the women. They'd also like more perfumes with longlasting, light scents; effective deodorants that won't harm clothes; foundation make-up that can be sprayed on; better allergy-proof cosmetics and blemish-hiders.

On the other hand, 34% of the men want better shaving creams and lotions, and a facial depilatory. Another 33% want an effective but unscented deodorant. Only a small percentage of men wished for a hair restorer or a product to prevent baldness.

Wrinkle-free clothes got a big vote



Chemical companies report impressive savings...up to \$17 per thousand bags...in export synthetic rubber shipments by switching from conventional paper bags with burlap overslips to Bemis Waterproof (laminated-textile) Bags.

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#### SPECIALTIES

from both sides—52% of both sexes want fabrics that are really wrinkle-proof and need no ironing. Durability, warmth-without-weight, adjustable sizes, and odorproof fabrics also were mentioned.

#### PRODUCTS

Clean Up: Plastic can be cleaned from extrusion- and injection- molding cylinders 50% faster, reports Wasco Chemical Co. (Sanford, Me.) about its new purging compound. Called Wascolite Purging Compound, the material is packaged in 100 lb. bags, sells for 35 ¢/lb.

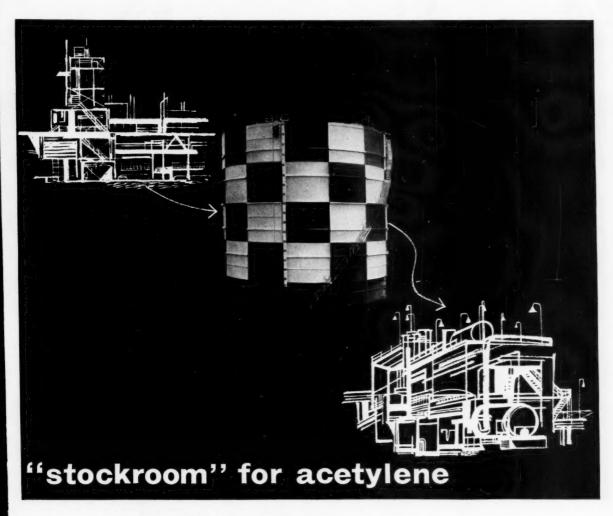
Going to Seed: A new seed protectant for use on cereal grains has been devised by California Spray-Chemical Corp. It's called Ortho L M seed protectant, contains methyl mercury and 8-hydroxyquinolinate. It's available as a concentrated liquid, is said to have shown superior control of seed- and soil- borne diseases.

Tubed Auto Wax: Insul-Ease auto wax, containing carnauba wax and silicones, is being marketed by Bardahl Oil Co. (St. Louis). Packed in ½-lb. collapsible aluminum containers, the combination wax-cleaner sells for \$2.

Skin Game Entry: Catalin Corp. of American (New York) has just brought out a new bacteriostat said to be highly effective in inhibiting the reproduction and growth of skin bacteria. Called GS-1, it is bithionol and is available in lab sample quantities at present.

Spatter Spate: A West Coast company has come up with a line of multicolored alkyl enamels for creating spatter effects. Offering 12 colors in 6-oz. and 16-oz. cans is the Zynolyte Products Co. (Los Angeles), which sells its products under the name Spatter Kote. The small aerosol unit sells for 98 cents, the larger for \$1.59.

Aluminum Cleaner: A paste form of aluminum cleaner, tabbed Lumicare and selling for \$1.50 for a 6-oz. tube, has been introduced by Northbrook Products Co. (Northbrook, Ill.). The cleaner-polish also comes in quarts (\$5.95) and gallons, does not require steel wool for cleaning action.



### Linde purchases Wiggins Gasholder for storage of acetylene between production and use cycles

When Linde Air Products Company's new acetylene plant in Montague, Michigan goes "on stream", a new 100,000-cubic-foot Wiggins Gasholder will play a vital role in the operation. Every cubic foot of acetylene produced will pass through the "stockroom" on its way to DuPont for use in the production of Neoprene. The gasholder will provide acetylene storage and will serve as surge capacity to enable Linde to satisfy both normal and emergency requirements.

If you produce, store or use gases, investigate the advantages of Wiggins Gasholders. They can be built to any capacity—from 50-cubic-feet to a million. Call or write General American for complete information.



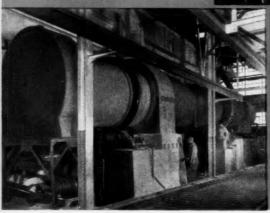
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Rotary Dryer—Lifters shower material through stream of hot air. Dryer may also be used as cooler by using cool air.

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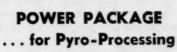
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Allis-Chalmers also makes equipment for solvent extraction, electronic heating, metal detection and inter-floor conveying.

Bulletin 25C6177 covers all Allis-Chalmers equipment for the process industries. Bulletins on specific equipment lines are also available. See your Allis-Chalmers representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

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## RESEARCH



Hercules' Skolnik heads new research information center.



Keeping an Eye on the Opposition

This month, Hercules Powder's Herman Skolnik will take command of a literature searcher's dream come true-a new \$1-million information center that has been tailored to Skolnik's personal specifications. The center embodies the latest in collection, evaluation, and dissemination of technical know-how, epitomizes the growing importance to lab men of predigested scientific intelligence.

Toward this end, Skolnik—a veteran of 11 years in industrial intelligence\*—has assembled a staff of 15 chemists, 3 professional librarians, and 10 non-technical employees who work in 20,000 sq. ft. of space.

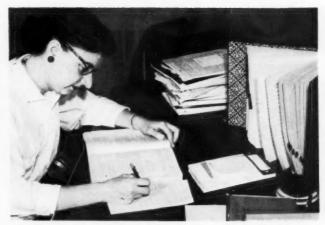
They do literature and patent searching and translations; abstract papers and patents (with emphasis on

those that are known to be pertinent to research projects underway at Hercules); file confidential company reports-also digests and indexes of the latter. IBM equipment is on hand for correlating chemical data (e.g., screening compounds for insecticidal activity, melting points, etc.). Normal library services and technical correspondence files round out the center's func-

Not all companies can boast as elaborate information-gathering facilities as Hercules (see photos). But many have kept pace with the trend toward greater reliance on specialists for literature searching and abstracting. Behind this trend are two factors: the growing mass of domestic and foreign technical publications; plus the pressing shortage of research project manpower.



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Abstracts of patents and literature are prepared.



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Current literature stacks feature Skolnik-designed shelves.

Center also compiles literature surveys.

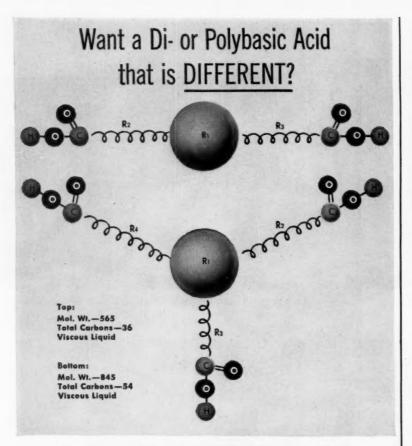
Du Pont, for example, recently formed an "intelligence division" in its chemical department. Division Supervisor M. G. Wise, speaking before a recent symposium on information services at New York's Chemists Club, revealed that "the new division has 60 staffers, of whom 20 are technically trained to accomplish library, information and intelligence functions." Du Pont is stressing speed in digesting information, makes critical studies on particularly interesting topics.

At Union Carbide's Charleston, W.Va., development department the tack is somewhat different. Carbide doesn't believe in "emancipating the researcher from digging through the literature," considers this chore part of his job.

But Carbide does distribute a monthly patent-abstract report prepared by outside professionals, also makes an IBM machine available to its lab staffers for both information storage and data correlation. And one or more industrial periodicals are assigned to each researcher, who is responsible for abstracting information relevant to current projects.

Wives of Standard Oil of Indiana (Whiting) researchers abstract patents and literature for the company's research staff. These abstracts are published in newsletter form. Besides getting paid, the wives acquire an understanding of their husbands' work—presumably a morale builder.

Chicago's National Aluminate Corp., now setting up a library service for its research staff, is trying to find out what kind of information its people want, how quickly it should be made available, how deep to index subject matter, etc. Nalco plans to use one



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#### RESEARCH

tactic that is becoming increasingly popular among research organizations: photostating the tables of contents of current periodicals, immediately circulating them to alert staffers to articles that they otherwise would not discover until they received routed journals. Nalco doesn't believe that literature-searching machines (CW, Mar. 13, '54, p. 74) are its ultimate answer, either; it believes that they're better suited to narrow, rather than broad fields of research.

A West Coast firm—one of several nationally prominent companies expressing no interest in setting up a central intelligence bureau, feels that nobody can do as good a job of abstracting for his unique needs as a researcher himself. An abstracting service, it reasons, is bound to miss the significance of information seemingly unrelated to a specific project.

While conceding that the researcher may need help in keeping up to date, it does not believe in serving information to the brainy researcher. later "carrying the results of his profound thinking away." If you set a man to doing nothing but thinking, the company feels, he starts thinking of family matters, vacation, etc. Summarizing: "A little drudgery is good for the researcher's soul."

Part of the Load: Skolnik is inclined to agree. He by no means offers to do all a Hercules researcher's digging for him. But he does aim to ease the burden, keep key men from wasting valuable time poring over vast quantities of rough information.

The center publishes a literature and patent reference bulletin with pages sub-perforated to a 3 x 5 in. size for ease in clipping and filing. Another weekly digests Hercules research reports. A cumulative listing of company reports is issued monthly.

Despite encouragement to do literature digging, the Hercules researcher can call on the center to help make complete searches for a particular project. Other special services include instruction for researchers on improving their personal files; a microcard and microfilm file on patents; and translators who can handle thirteen languages among them.

To make literature searching physically more pleasant. Skolnik took pains to design a variety of specialized pieces of equipment for the center.

Literature stacks are planned so as



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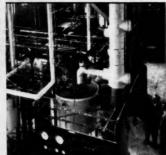
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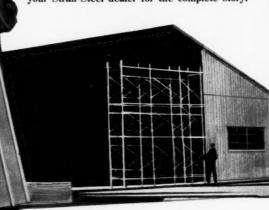
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#### RESEARCH

to hold a year's supply of journals behind sliding panels, with the current issues of each journal placed on the panels themselves (picture, p. 79). The panel is angled so that an averageheight researcher (about 5'10" at Hercules) can see all the rows of publications at a glance when standing two to four feet away.

To make conditions more comfortable for the searchers, private reading booths, each with a bay window, air conditioning and heating units, are set up along the library walls.

To handle heavy volumes like the bound issues of Chemical Abstracts, special counters can be placed on the stacks so that a book may easily be flipped out into reading position.

By and large, it's the small and medium-sized companies that have no formal industrial intelligence organization, prefer to depend on outside professional searching services. And, if the cost of even this limited service becomes too high, most will revert to no service at all; researchers will do all their own literature searching. This, however, will be the exception that highlights a very definite trend to more and better literature service for researchers

#### Viscose Contender

American Viscose Corp.'s annual stockholders meeting (at Philadelphia's Drake Hotel) buzzed with excitement last week over disclosure of a new, high-strength staple fiber characterized as "the greatest improvement in rayon since its invention."

In unveiling the find-named Avisco XL-Herschel Cudd, vice-president of research and development, disclosed that yarns in the new staple are 70% stronger when wet and 40% stronger in the dry state than conventional rayon.

Said Cudd, "In comparable construction and weave, Avisco XL fabrics have 25% more breakingstrength and 33% more tear-strength than cotton." These properties could open new market vistas for rayon in apparel, household-furnishings, and industrial uses (e.g., ducks and tarps).

The newcomer is compatible with acrylics and polyesters in blends. It has been in pilot-plant production for over six months, is available in limited commercial quantities for "selected end uses."

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May 18, 1957 • Chemical Week

### **Boost for Cancer Chemicals**

Congress has okayed cost-plus contracts for synthesis of potentially valuable cancer drugs by non-profit research institutes.

That overcomes a major hurdle to the National Cancer Institute's drive to enlist non-profits and drug makers in a crash program to find a cancer cure.

Last week's Senate appropriations subcommittee hearing (CW, Technology Newsletter, May 4) held out little hope that new government funds for industrial cancer chemotherapy research will be forthcoming immediately. But there's no doubt that such contracts, starting at a \$5-10 million/yr. scale (CW, April 6, p. 104) will be approved eventually.

At the hearing, the Senate served notice that it is ready to step in with a special appropriation for needed amounts as soon as the National Institutes of Health sets a figure and requests the aid. The NIH pressed for, and won, assurances that it has the authority to negotiate cost-plus cancer chemotherapy contracts.

That's important because, up to now, NIH and other Health, Education & Welfare Dept. agencies have lacked authority to allow more than 15% of direct costs for overhead items and Congress has refused to raise that figure. As a result, contracts have been limited to individual scientists and universities (which have tuition fees and other funds to help carry expenses). Non-profit research institutes, however, can't make ends meet on this small allowance since their overhead is high, often equals direct research costs.

Government lawyers had previously opined that the General Services Administration can grant HEW the needed authority. Now NIH's Cancer Institute has been given the green light by Congress to negotiate costplus contracts with non-profit institutes. Overhead allowances on these contracts run 75-100%. It's also free to make fixed-fee arrangements.

Contracts will specify compounds to be synthesized, and the amounts. The contractor will agree to put a specified number of people to work on the project, "exercise diligence in carrying out the assignment" (no deadline is set for completion). Contractors also agree to report at stated intervals to the Cancer Institute. (All chemicals produced are government property).

Now that Congressional approval for such contracts has been obtained, a few contracts, already negotiated, will probably be signed soon. Among them: a \$500,000 contract with Stanford Research Institute (CW Technology Newsletter, May 4).

And funds needn't necessarily be a problem. One subcommittee member, Sen Warren Magnuson (D. Wash.), tells CW that the Cancer Institute is free to tap other funds for expanded industry work-diverting money from the \$20 million in its cancer chemotherapy program or the overall \$46million Cancer Institute budget. Moreover, if this will restrict other cancer projects unduly, NIH is assured of a favorable reception to a request at any time for more contract money.

One thing is sure: The government feels that contractual arrangements with non-profit research institutes won't do for industrial firms, whose goal is the sale of cancer drugs. They will have little chance of getting patents if they turn up a successful compound to combat cancer. But the government feels they are entitled to some protection of their investment. Companies, moreover, will want guarantees against mandatory licensing of their find to all comers. Compulsory royalty-bearing licenses to bona-fide competitors chosen by the government or defined in contracts with the Cancer Institute are possibilities.

The National Cancer Institute has been testing some 40,000 substances/year (provided by industry) for chemotherapeutic effect on mice. Now, the institute is ready to sign about 10 nonprofit research institutes to contracts under which they will synthesize promising compounds uncovered by the NCI's screening program.

Industry's role would go beyond this, would provide a complete range of research and development services and ultimately manufacture and sale of drugs for human cancer treatment. Planning for such a program is in an advanced stage. The institute has been talking details with every major drug maker, plus a number of chemical firms in recent weeks. Most are ready to sign contracts as soon as adequate funds are made available.

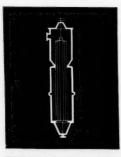
Earlier this year, ten drug and chemical producers (at the request of the National Cancer Institute) estimated they would need \$5.2 million in government assistance to give cancer research the boost it needs. This sum would be matched by sizable company spending in most cases.

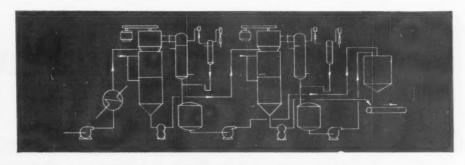
Proponents of the industry-wide crash-program concept see this monetary transfusion as a faster way to a

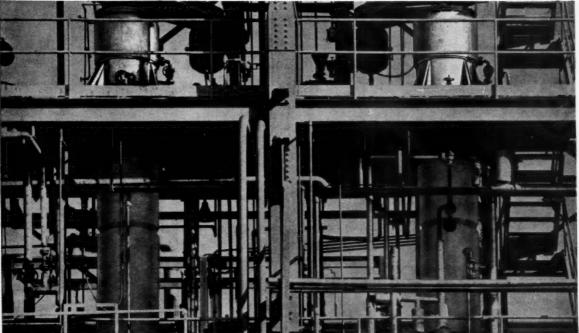
This confidence isn't based entirely on sheer optimism. An unexpectedly large number of promising leads have been turned up by the Cancer Institute's screening program-to which drug and chemical firms now contribute most of the compounds. The institute now spends \$4.5 million annually on this segment of its cancer research, is pretty sure to increase the figure. If given a lift in its screening program, the institute feels a cancer cure is more than just possible.



MAGNUSON: For cancer research fund requests, a good reception.







### Turba-Film Processor produces epoxy compounds at Shell

The chemical and processing industries recognize that good engineering is just as important as good equipment. In recent years, Rodney Hunt has accumulated broad experience in specialized applications of the Turba-Film® Processor as well as in completely engineered package systems.

Shell Chemical Corporation produces petroleum-based resins at its plant near Houston, Texas. The process involves removal of the solvent carrier to give a dry epoxy compound. Rodney Hunt engineers proved the patented Turba-Film Processor ideal for this application. The Turba-Film permits a high degree of solvent removal with greater through-put than conventional equipment. Solvent and carrier pass through two Turba-Film units as a thin, falling film. Localized overheating is eliminated and product color is greatly improved.

Are you concerned with deaeration, deodorization, esterification, concentration, stripping, distillation, evaporation or other processing operations? Chances are good that Rodney Hunt can give you profitable answers to your problems.

#### RODNEY HUNT MACHINE CO.

**Process Equipment Division** 

29 Vale Street, Orange, Massachusetts, U. S. A.



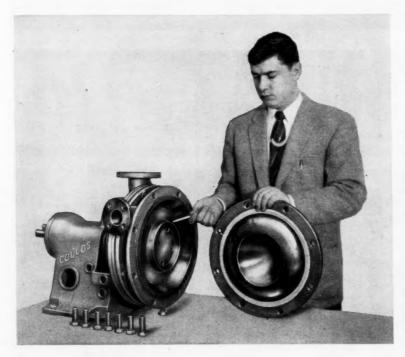
SERVING THE CHEMICAL AND ENGINEERING INDUSTRY WITH EQUIPMENT AND ENGINEERING

7

#### ANNOUNCING

New Pfaudler Catalog describing standard stainless steel reactors for laboratory, pilot plant and full scale production. Ask for Catalog 944.

Pfaudler Corrosioneering News Published by The Pfaudler Co., Rochester, N.Y.



## New glassed pump fights off corrosion for years

A unique new Goulds centrifugal pump with Pfaudler glassed interior surfaces promises to answer a pressing need of the process industries for an economical, corrosion-resistant

The result of three years of joint development effort by Goulds Pumps, Inc. and Pfaudler, this new pump assures years of corrosion-free operation at low cost.

#### Resists acids and alkalies

Since all surfaces contacting the pumpage are glassed, this new pump resists all common acids except hydrofluoric to at least 212°F.

Alkaline solutions up to pH 12 and up to 212° F also leave the pump unmarred.

#### Costs less to buy, run, maintain

The comparatively low cost of glass and the economy of the Goulds-Pfaudler fabrication method combine

to make this pump less expensive than others using special methods and materials to achieve a measure of corrosion resistance.

Glass also presents a smoother surface to such substances as polymers than the most highly polished metallic surfaces. So the flow characteristics of Goulds-Pfaudler glassed pumps are considerably improved over metallic types. Naturally, this makes the pump more efficient, less costly to operate. Because Pfaudler glass is chemically inert, there can be no catalytic effects, no side reactions, no contamination. Cleaning is easier and required less often.

Thus you can save three ways with this truly corrosion-resistant pumpin initial cost, in operating expense, and in maintenance.

Distributed by Goulds Pumps, Inc. Distribution of the jointly made pump will be handled exclusively by Goulds

## Pfaudler

Pumps and its distributors. At present, you can get the pump in four sizes with capacities running up to 700 GPM, heads to 140 ft.

Write to Goulds Pumps, Inc., Seneca Falls, N. Y. for descriptive literature.



#### From stock parts...to



### finished heat exchanger... to you without the time consuming delay of "custom design."

Pfaudler stockpiles a complete line of flexible-standard components which can be assembled to fill your needs in two to six weeks.

#### Two-week delivery possible

If your process requirements can be met by either a single- or doublepass carbon shell heat exchanger in the capacity range between 56 to 316 sq. ft., you can get "off-the-shelf" delivery in just two weeks. Other standard sizes up to 20" shell diameter are quickly assembled to your specifications in just four to six

Tally these added advantages to your profit when you order Pfaudler heat exchangers:

They're versatile. Use them as heaters. condensers, or coolers. These units are designed to ASME and TEMA

## Corrosioneering News Plauder Corrosion and processing costs.

codes for 75 psi tube pressure and 150 psi shell side pressure up to 350°F. Only slight modifications are required for higher pressures, and an expansion diaphragm can be added to meet higher temperature gradient.

They're economical. Due to standardization of design and the pre-stocking of components, they cost much less than custom built units.

**They're leakproof.** No internal gasket. No possible intermixing of the hot and cold fluids because of gasket failure.

The flexible standard components are all made of stainless steel. However, when your requirements call for them, these parts can be made of Nickel, Inconel, Monel, Hastelloy, Zirconium, Titanium, and combination glassed steel with Karbate or alloys.

Pfaudler engineers are always ready to help you with your heat exchanger problems.

You'll also find a copy of Manual 837, "Pfaudler Heat Exchangers and Condensers," helpful. Along with complete descriptions of Pfaudler heat exchangers and condensers, it contains useful performance and thermal design data. Write for a copy today.

### New pretesting service on wiped-film evaporators

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1957



Now you can find out beforehand just how Pfaudler wiped-film evaporators will process your products.

This pilot plant unit has just been installed at Pfaudler to provide such pretesting service.

Inherent in the design of this evaporator are these important operating advantages:

**Higher heat transfer**—even for highly viscous products.

Shorter contact time—as low as a fraction of a second—prevents deteriora-

tion of heat-sensitive substances.

**Uniform film flow** — prevents fouling and solids build-up.

Low operating pressure—from atmosphere to a fraction of a millimeter.

Data Sheet 39 tells more about the new evaporator.

To request a test sample of your product, check the coupon first for questionnaires 23 and 24.

### How to take the guesswork out of buying columns

It's no easy matter to select the proper columns for a given operation.

You have to balance such diverse factors as cost, corrosion resistance, handling and cleaning, vapor and liquid capacity, pressure drop, load efficiency, etc., etc., etc.

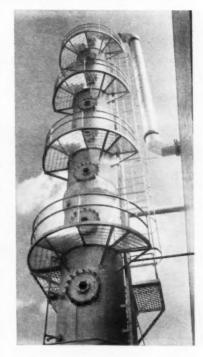
Pfaudler has had long years of experience designing and fabricating columns for fractionating, stripping, absorption, extraction, and numerous other chemical reactions.

You can make good use of our experience in fabricating with glassed steel, as well as a great many alloys, and from our design experience with bubble caps and perforated or sieve tray columns, Turbogrid tray column, as well as packed and spray type columns.

To begin with you can find the answers to many basic questions in our Bulletin No. 940. Check the coupon for a copy.

Then you can check with Pfaudler for detailed answers to your specific problems.

Result? Simply the right column for your process.



Please se	FAUDLER CO., DEPT. CW-57, ROCHESTER 3, No. and me the following: ☐ Heat Exchangers and Condenser—Manual anns—Bulletin 940 ☐ Wiped-Film Evaporator Questionnaires 23 and
□ Wipe	l-Film Evaporator Data Sheet 39.
Name	
Title	
Compan	y
Address.	
City	Zone State



## HILTON-DAVIS adds another BAKER PERKINS VACUUM MIXER to their production facilities

Steadily increased demands during recent years for Flushed colors has made it necessary for the Hilton-Davis Chemical Co. of Cincinnati, Ohio, to continually expand their mixing capacity. Shown below is the latest Baker Perkins mixer that is now in service in "flushing" operations.

Baker Perkins "flushers" have been instrumental in making it possible for Hilton-Davis to produce economical, superior quality pigments that are noted for their excellent brilliance, fastness, and uniformity.

When you need good, dependable chemical mixing machinery that will help increase your production and keep your maintenance and operating costs low, it will pay you to consult a BAKER PERKINS sales engineer or write us today.



## BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION . SAGINAW, MICHIGAN

#### RESEARCH

#### PRODUCTS

Rare Earths: Michigan Chemical Corp.'s rare earths and thorium division (Saint Louis, Mich.) now offers oxides of samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, and yttrium. Salts and metals of these rare earth elements are available on a custom basis.

Reagent Entry: DL-methoxyphenylacetic acid, a selective precipitant for sodium, is now offered by Eastman Kodak Co. (Rochester, N. Y.)

Pyrrolidine: Technical-grade pyrrolidine (minimum purity 95%) is now available from Ansul Chemical Co. (Marinette, Wisc.). The chemical undergoes reactions typical of secondary amines, has potential applications in preparation of rubber accelerators, insecticides and pharmaceuticals.

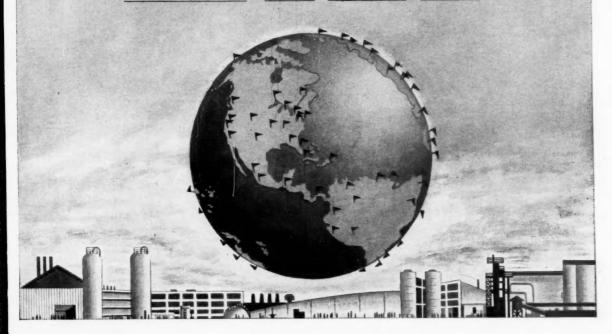
Research Chemicals: Techniservice (New York) is now offering the following research chemicals: petroselinic acid,  $\delta$ -3-carene, and quinic acid (hexahydro-1,3,4,5-tetrahydroxybenzoic acid).

Stable Aluminum: Sodium aluminum lactate is now offered by Wickhen Products (Milwaukee, Wis.) for use in the cosmetics industry. The aluminum is said to exist in stable form at a pH of 4.5, or over.

#### EXPANSION

- Heyden Newport Chemical Corp. will build a new laboratory for synthetic rubber chemical research at Pensacola, Fla. According to the firm's president, Simon Askin, the new lab is expected to be ready in the first quarter of 1958, will house studies directed toward "the development of new emulsifiers, tackifiers, antioxidants, accelerators, retarders and other specialties for both the polymerization and compounding of synthetic rubber."
- Catalyst Research Corp. (Baltimore) reportedly plans expansion at sites in Westminster and Cambridge, Md. The firm is a subsidiary of Mine Safety Appliances Co. (Pittsburgh).
- Stanford Research Institute has awarded a \$3,200 contract to the Tibbs Construction Co. (Palo Alto,

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Linoleum and Floor Covering

Lubricant

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Match Metallurgical Metal Working Oil Cloth Optical Paint, Varnish and Lacquer Paper Petroleum Pharmaceutical **Photographic** Porcelain Enamel **Plastics** Pottery Printing Ink Pyrotechnic Refractories Rubber Shade Cloth Soaps Textile **Veterinary Remedies Welding Electrodes** 

Wall Paper

#### Here are typical Harshaw chemical products

Electroplating Salts,
Anodes and Processes

Organic and Inorganic Dry Colors and Dispersions

**Driers and Metal Soaps** 

Vinyl Stabilizers

Ceramic Opacifiers and Colors **Fluorides** 

Glycerine

Preformed Catalysts, Catalytic Chemicals

Synthetic Optical Crystals

**Agricultural Chemicals** 

**Fungicides** 

**Chemical Commodities** 

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FREE! This 16-page booklet lists the many chemicals available from Harshaw.

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You are looking into the interior of a 37½-in. O.D. by 24-ft 10-5/7-in. autoclave liner with *fine silver* Hortonclad® on stainless steel backing.

Hortonclad, available only with CB&I process and storage vessels; is a composite metal having an integral and continuous bond produced by a high vacuum brazing process. CB&I vessels can be fabricated using Hortonclad plates with silver, monel, Inconel, Hastelloy, stainless and other metals and alloys.

Write our nearest office for further information on Hortonclad and its use with CB&I vessels.

Below: 37¼-in. O.D. by 24-ft. 10-5/7-in. autoclave liner fabricated of Hortonclad plates, ready for shipment from our Birmingham plant.



#### RESEARCH

Calif.) for construction of a 35-foot solar furnace tower to be located at the Institute's headquarters in Menlo Park, Calif. The tower will house the first solar furnace to be built in Northern California.

• A new company, Texas Nuclear Corp. (Austin, Texas) offers a research and consulting service based on its recently acquired 2 mev Van de Graaff accelerator. Its staff and equipment can handle such programs as analysis of compounds by nuclear methods, investigation of radiation damage, electron sterilization, etc.

• Construction of Escambia Chemical Corp.'s research center at Wilton, Conn., is now underway. The center (CW, Nov. 24, '56, p. 98) comprises a 50,000 sq. ft. building on a 46-acre site.

 Olin Mathieson has opened a new research laboratory in Niagara Falls, N. Y., which will be used for defense work. It will be operated by the firm's high energy fuel division.

 Stauffer Chemical Co. has begun construction of a major addition to its research labs at Richmond, Calif. The facility, expected to cost several hundred thousand dollars, will be for research in special metals, high energy chemical fuels, and new inorganic plastics.

• Consultants Irving Skeist and Eugene Schwarz have consolidated laboratories, will offer coordinated research and consulting services in textiles, plastics and related fields at Skeist and Schwarz Laboratories, Inc. (Newark, N. J.).

#### REPORTS

• "Chromatography as a Method of Identifying Bacteria" (PB 121591, 50¢) offers information on work done at the Air University School of Aviation Medicine.

• "An Elementary Statistical Approach to Microbiological Research" (PB 121713, \$1.50) illustrates systems to determine the significance of laboratory results in this field. The effect of fungicides on cotton webbings is used as an illustration.

• Researchers in the field of radiology will be interested in "Radiological Health Handbook" (PB 121784, \$3.75), which contains a glossary of radiological terms, sections on physical, chemical and mathematical data, radioisotopes, decay, radioassay and



### An important message

## to the man who thinks his air pollution problem is too difficult—or too expensive—to correct

Too often an air pollution problem exists today for one reason only: The company concerned does not yet know there is now at hand an efficient, effective method of correcting it—often at an actual saving through waste heat recovery.

The method is catalytic oxidation, and the firm that makes this development possible is Oxy-Catalyst, Inc.

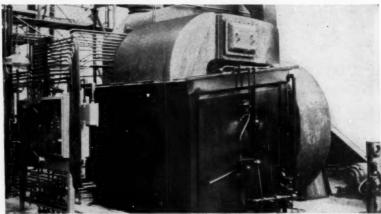
Catalytic oxidation works by "burning" harmful and irritating combustible contaminants in an exhaust stream at temperatures far below their normal ignition points. It provides close to 100% cleanup of foul-smelling fumes and odors. It reduces fire hazards and maintenance problems by eliminating troublesome condensates in oven and furnace exhausts.

Thus Oxy-Catalyst installations can not only control air pollution. They can also be used to release the latent heat energy in waste and process gases. And they can sometimes do both at once.

#### A More Efficient Catalyst

The key to successful catalytic oxidation is, of course, the catalyst itself. Features which make the Oxycat unique are:

- The combination of platinum and alumina, chosen from hundreds of elements and compounds as the most active and long lasting catalytic agent
- The carrier, a high-grade porcelain selected for its strength, chemical inertness, and resistance to high temperatures



Oxycat installation on Standard Oil Company of California's phthalic anhydride unit at Richmond, Calif.

- The patented method of applying the catalyst to the carrier
- The patented mechanical design of the Oxycat itself

The result of this combination of features is a catalytic unit with exceptionally long life at high efficiency. Oxycats are strongly resistant to thermal shock—to contaminating agents and clogging. There's no problem of frequent cleaning or reprocessing. Oxy-Catalyst installations are still functioning at high initial efficiency after over 20,000 hours without maintenance or servicing.

#### Already in Wide Use

Oxy-Catalyst installations are now working effectively in a wide range of industries

 oxidizing combustibles from such processes as asphalt oxidation; phthalic anhydride, polyethylene and ethylene oxide manufacturing; catalytic cracking; and many others.

Oxy-Catalyst installations are carefully engineered to your individual requirements, and our engineers, working with yours, can install Oxycats effectively in any existing plant. So, if air pollution is a problem in your operation—if irritating fumes and odors are costing you neighborhood good will—you should know that Oxy-Catalyst offers a practical, realistic answer to your problem.

Fill in the coupon, or write on your business letterhead, for complete information now.

## **OXY-CATALYST, INC.**

Industrial Division
Wayne, Pa., U.S.A.



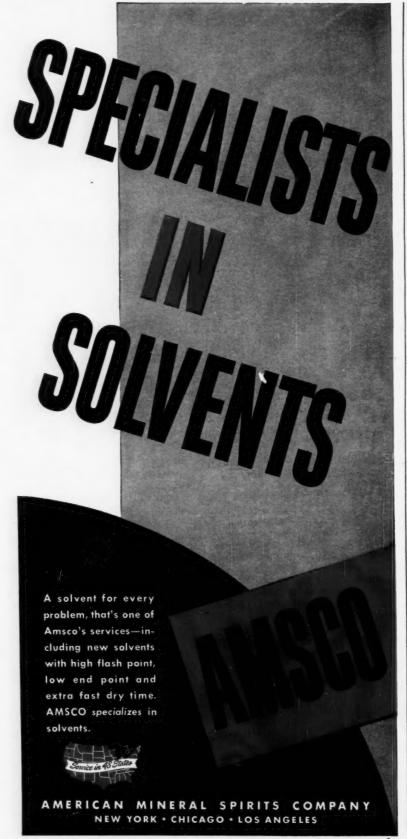
Fume Elimination Processes and Equipment Industrial • Automotive • Consumer Products

Oxy-Catalyst, Inc Industrial Divisio	
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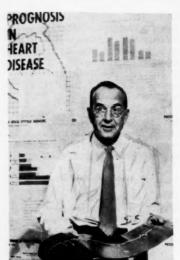


#### RESEARCH

radiation protection. A table of isotopes is also included in the 365-page book.

• Three reports titled "Fluids, Lubricants, Fuels, and Related Materials" contain results of a continuous project by the Petroleum Refining Laboratory of Penn State University for the Air Force. Part 1 discusses synthetic lubricants (PB 121508, \$3.50, 210 pp.). Part 2 is an investigation of phosphorus-containing lubricity additives and their effects (PB 121509, \$4, 256 pp.). Part 3 deals with hydraulic fluids, lubricants for jet engines and fuel dirtiness, all at high temperatures (PB 121510, \$5.50, 342 pp.).

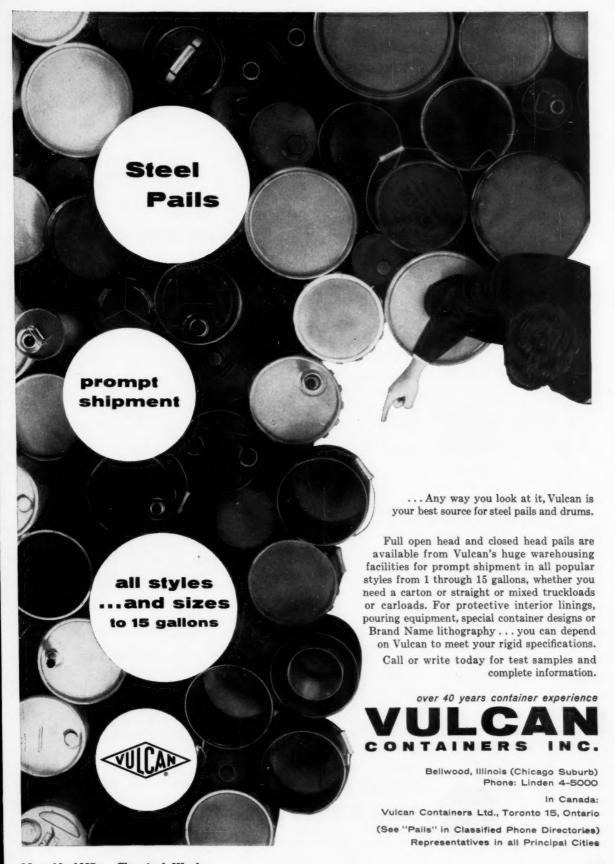
• "Development of Ferroelectric Ceramics" (PB 121418, \$1.50) describes facilities and methods devised by the Navy for the ceramic forming of transducers of barium titanate.



WIDE WORLD

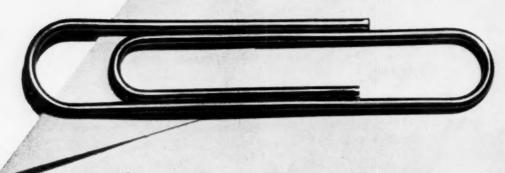
#### Pressure Pointer

SYNTHESIS of a naturally-occurring chemical, angiotonim, is the latest milestone in high blood pressure research. The compound, a polypeptide, raises blood pressure in animals, is found in humans having damaged kidneys. It was synthesized by Irvine Page (above), head of the Cleveland Clinic (and former president of the American Heart Association) with F. Merlin Bumpus and Hans Schwartz. The find opens the way to research in angiotonim antagonists, possible control of its hypertensive effect.



May 18, 1957 • Chemical Week

memo:



TO: CHEMICAL SALES MANAGER.

Xylene with HIGH META content. SUBJECT:

Since Cosden Petroleum Corporation recently placed on stream an ultrafractionation unit for the direct recovery of ethylbenzene from mixed xylenes, your attention is directed to the following isomer breakdown of one of our streams:

ISOMER	PER CENT
p-Xylene	. 11%
m-Xylene	. 59%
o-Xylene	
Ethylbenzene	. 3%
Toluene	. 0%

You may have some customers who would be interested in a source of xylene containing an unusually high META content.

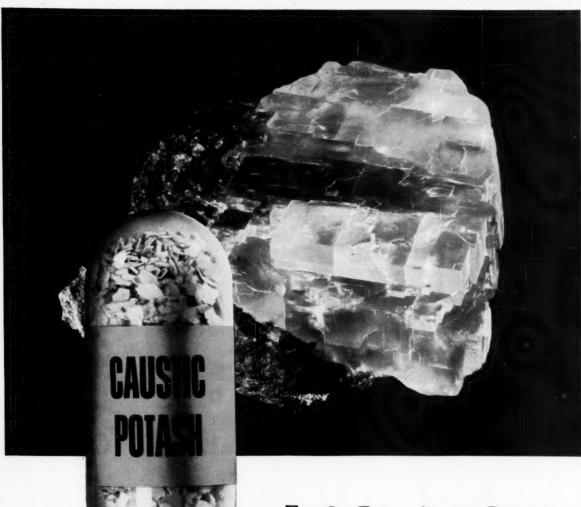
Manager of Manufacturing

P.S. This material available for immediate shipment in tank car quantities.



for complete information write Organic Chemicals Division, Dept. C

COSDEN PETROLEUM CORPORATION BIG SPRING, TEXAS



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You get important "extras" from International, the one basic producer of Caustic Potash. Unquestioned security of supply. Uniform quality. High purities. All standard grades. Prompt shipments.

99.95+% pure electrolytic grade KCl is refined at Carlsbad from sylvite ore and shipped to Níagara Falls for the production of KOH and other potash salts. Call the office near you for fast service.

CAUSTIC POTASH • CARBONATE OF POTASH • POTASSIUM CHLORIDE
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Just check the desired items on the coupon below and mail to:

Salesmen's Motivation Makes the Difference \$1  Send ———— copies	Coatings: How to Sell a \$700-Million Market \$1 Send ————— copie
Is Top Chemical Management Underpaid? \$1  Send ———— copies	Your Future in Nuclear Energy \$1 [ Send ———— copie
Time to Turn the Atom to Profit	A Better Way to Plan Your Company's Growth \$1 Send copie
Pesticides—Heading for \$1 Billion/Year (96 pp.) \$1.50 Send ———— copies	Plastics \$1 [ Send ——— copie
Dyes & Pigments—full-color reprint	Operations Research
Reorganizing Your Company	New Creativity Gambits
Seaweed Colloids \$1  Send — copies Guided Missiles \$1 Send — copies	Synthetic Detergents
Enclosed is \$	for this order. (Special bulk rates on request.
Name	



Columbia-Southern soda ash has been favored with the trusting confidence of leading American glassmakers since 1899. They find, year after year, that this basic alkali is manufactured with extreme care to conform to their particular requirements. Nor is the glass industry unique in this respect. Columbia-Southern has learned with

creative care the varying soda ash needs of producers and processors active in chemicals, cleansers, soap, pulp and paper, textiles, metals, petroleum refining, water treating, leather, enamels, pigments, ceramics and other fields. Couldn't you benefit from this experience, and the resulting superiority of Columbia-Southern's soda ash?

## COLUMBIA-SOUTHERN CHEMICAL CORPORATION

SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA



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IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

## How Heavy Are U.S. Imports? Here's the

Commodity	Unit	Qua	ntity	Percent		r Value
•		1956	1955	Change	1956	1955
Chemicals, NES		*****			\$21,341,453	\$17,929,129
Sodium nitrate	s.t.	500,012	607,663	-17.7	16,336,875	21,698,822
Ammonium phosphates, fertilizer	s.t.	190,574	234,392	-18.9	13,034,579	15,937,100
Peat moss	s.t.	233,394	217,570	7.0	9,764,444	8,682,528
Ammonium sulfate	s.t.	197,650	173,118	14.0	8,782,577	7,934,943
Medicinals, coal tar	lb.	1,284,344	838,948	53.0	7,036,978	3,998,894
Dead or creosote oil	gal.	39,463,960	32,133,976	27.0	6,793,531	5,874,259
Sodium cyanide	lb.	107,493,874	137,186,135	-21.7	6,542,677	7,131,778
Vinyl acetate, unpolymerized	lb.	38,985,218	33,478,271	16.0	6,525,940	5,645,799
Potassium chloride, crude	s.t.	243,969	241,461	1.0	6,494,464	6,277,161
Calcium cyanamid	s.t.	67,185	81,708	-17.8	3,587,547	4,329,464
Barytes ore, crude	l.t.	520,740	321,104	64.0	3,563,544	2,181,119
Alcoholic perfumery	lb.	274,038	230,903	19.0	3,513,488	2,963,354
Phosphates, NES, crude	s.t.	123,078	131,327	6.2	2,626,226	2,702,955
Menthol, natural		438,383	269,226	63.0	2,413,323	1,658,039
Compounded fertilizers		32,016	15,798	102.0	2,318,260	990,013
lodine, crude	lb.	1,704,868	1,231,994	38.0	2,179,857	1,512,507
Aromatic, oderiferous mixtures	lb.	171,694	149,977	14.0	2,163,176	1,789,278
Acetanilide	lb.	2,126,630	2,345,861	-9.3	2,158,276	2,875,996
Calcium nitrate	s.t.	65,291	56,362	16.0	2,138,585	1,816,794
Prepared fertilizer mixtures		34,720	32,972	6.0	2,087,193	1,966,128
Sodium sulfate, crude	l.t.	88,239	107,853	-18.2	2,046,522	2,412,372
Potassium sulfate, crude		53,142	54,527	-2.6	1,920,712	1,981,483
Trichlorethylene		22,827,554	20,189,199	13.0	1,918,286	1,756,981
Cresols and cresylic acids		3,065,273	2,846,579	8.0	1,827,369	1,276,873
Cellulose, except acetate		3,178,418	356,757	789.0	1,765,788	74,128
Miscellaneous products, NES		1,454,545	1,497,545	-3.0	1,545,653	1,718,013
Chlorine		43,435,221	20,638,059	110.0	1,536,547	675,031
Ethyl alcohol		11,355,962	2,983,112	281.0	1,463,495	389,000
Litharge		10,741,672	1,501,039	616.0	1,388,733	174,895
Acetylene black		8,373,224	8,097,358	4.0	1,382,546	1,331,023
Cobalt oxide		793,450	1,072,950	-26.2	1,353,625	1,791,939
Furfural		10,760,951	8,507,995	26.0	1,341,781	924,887
Ethers and esters	lb.	1,417,404	668,976	112.0	1,304,347	491,488
Caffeine		611,182	388,417	58.0	1,201,515	789,616
Tar and pitch, crude		8,715,679	6,921,679	26.0	1,103,457	886,082
Coal-tar acids		1,000,167	358,118	179.0	1,032,795	422,823
Naphthenic acid, liquid		1,374,053	1,189,487	16.0	1,030,575	846,654
Enfleurage greases, florals	-	3,130	4,159	-24.7	995,660	1,152,085
Pyroxylin, nonsheet		994,879	289,155	244.0	985,698	290,545
Medicinals, vegetable origin		41,941	30,390	38.0	969,274	122,785
Guano		12,496	8,540	46.0	949,180	673,554
Dextrine from potato starch		10,894,230	11,206,409	-3.1	906,102	901,462
Iron oxide and hydroxide, syn.		11,993,342	12,788,845	-6.2	879,200	850,095
Phenolic resins, synthetic		986,846	928,419	7.0	777,229	862,364
Sodium compounds		5,030,850	2,570,190	96.0	771,473	425,198
Zinc oxide, dry powder		7,333,697	6,639,075	11.0	770,156	685,186
Arsenic trioxide		12,843,816	14,443,828	-10.9	745,197	765,252
Acetone ethylmethyl ketone		8,584,093	2,062,586	317.0	741,947	178,269
Dextrine and substitutes		6,445,179	6,675,435	-3.5	732,160	745,447
Potassium-sodium nitrate mixtures		19,451	19,300	1.0	715,203	794,902
Varnishes		382,005	157,585	143.0	692,676	335,536
Sodium silicofluoride		10,372,484	4,653,664	123.0	683,585	222,716
Cellulose, other forms		602,809	907,290	-33.6	679,270	973,535
Antimony oxide		2,958,191	4,419,465	-33.0 -33.2	635,808	926,312
Synthetic nitrogenous fertilizers		8,931	7,285	23.0	596,558	470,034
Acetic acid, over 65% by weight		7,743,840		176.0		199,958
			2,805,718	305.0	595,025 581,374	
Synthetic gums and resins		1,365,902	337,140			193,721
Potassium cyanide		1,850,264	1,590,756	16.0 54.0	558,990	552,776
Naphthol and derivatives		276,951	180,688	—14.7	558,916	606,463
Coal-tar distillates, mixtures		14,446,414	16,949,384		545,720	533,599
Ultramarine	Ib.	4,004,605	2,476,137	62.0	541,746	339,104

## ecord for '56

When Chemical figures are published in a few weeks by the Commerce Department, they'll give convincing support to industry contentions that imports into the U.S. are increasing at a substantial rate. The statistics will show that total dollar value of all 1956 chemical imports was \$273.9 million—up 7.5% from 1955.

More significant though is the trend. That 7.5% hike is three times the percent increase that occured between '54 and '55. And in two broad commodity groups with decreased imports, the decline slowed appreciably. Fertilizer imports—which totaled \$102.1 million in 1956, were but 7.2% below '55 shipments. The comparable '54-'55 drop was 9.7%. For explosives, the decline of '56 from '55 was 11.0%. The year before saw an 86.7% decline. Total '56 explosives imports amounted to 1.83 million.

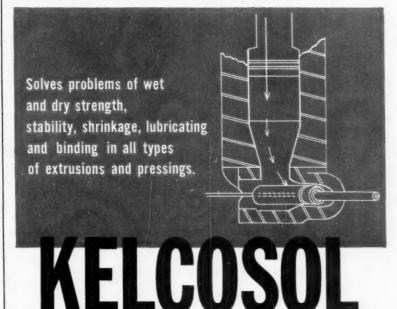
Last year, 119 chemical import product groupings in Commerce Dept. tables tallied to over \$200,000; 38 made the \$1,000,000 bracket. Some 67 items showed a 10% or more increase; only 30 had a 10% or greater decrease. Here's the broad picture:

Coal Tar Products: Total inbound shipments counted up to \$55.6 million in '56. That's a hefty 26% rise over 1955 imports of \$44.3 million. Responsible for much of the boost: benzene (see table p. 100). It registered a striking 117% gain. But creosote oil (27%), cresols and cresylic acids (8%), and coal tar acids (179%) also weighed in with sizable increases. Naphthalene (35.3%) and colors, dyes and stains (8%) decreased, however (see pp. 100 and 102).

Industrial Chemicals: This category reflected the general upswing, rising about 12%. Ethyl alcohol went up 281%, acetone, methylethyl and other ketones increased 317%; acetic acid, 176%; ethers and esters, 112%; and chlorine was up 110%. These increases more than offset the drops in sodium cyanide (21.7%); vinyl alcohol and derivatives, about 56%; sodium sulfate, 18.2%; and cobalt oxide, 26.2%.

Pharmaceuticals: One of the largest percentage increases—30%—involved materials in this category. Imports for

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## Commodity Quantity Percent Dollar Value 1956 1955 Change 1956 1955

GLYCERINE: About one-third less glycerine was imported in 1956 than in '55, thus sharply reversing the 1955-54 pattern. Argentina, the Philippines, Japan and India all were big losers. But Cuba, helped perhaps by cheaper shipping costs, scored a million-lb., 10% gain.

	5.052.040	0.004.1671	22.1	£040 710	\$1,723,564
Argentina	5,952,940gal.	8,894,167gal.	-33.1	\$949,719	\$1,725,504
Philippines	5.919.425			956,407	
Cuba	3.567.634	3.252.388	10.0	609,187	604.885
Cuba					
Japan	2,409,426	3.984.513	-39.5	365,099	761,966
India	1.792.401	3.901.138	-54.1	264,513	732,767
Indonesia	887.590			166,423	
Thailand	663,470	220,835	200.0	114,486	40,948
Total*	22 553 972	33.594.310	-33.0	4.655.157	6.044,657

VINYL ALCOHOL, CHLORIDE and DERIVATIVES: This was one of the few large-volume items in the industrial chemical's group to suffer a severe reversal. Total shipments of 13 million lbs. amounted to only 44% of 1955's 29.5 million lbs. All principal exporting countries experienced pronounced declines.

Italy	12.221,309lb.	26,280,2131ь.	-53.5	2,320,856	5,502,325
United Kingdom	571,039	1.155.322	-50.6	76,573	285,717
Japan	125,980	1.588.992	-92.1	28.883	346,749
West Germany	41.996	82,400	-49.0	18,994	54,526
Switzerland	14.984	1,910	684.0	11,217	2,742
France	11.023	6.780	-63.0	4,627	1,514
Canada	6.823	331.594	-98.0	4,577	91,086
Total*	12,995,193	29,452,713	-56.0	2,466,210	6,285,888

<sup>\*</sup>Includes shipments from countries not listed separately

BENZENE: For the second consecutive year, benzene imports increased over 100%, reached, in 1956, a whopping 69.5 million gal. In '54, less than one-fifth of that quantity came in. Russia scored the most impressive gain (171%), accounted for 57% of all aromatic imported.

U.S.S.R.	39.763.764gal.	14.695.393gal.	171.0	10.532.093	3,777,022
Poland	19,653,681	13.085.764	50.0	4,511,622	2,516,344
West Germany	5,760,085	3,321,531	73.5	1,509,616	647,409
Netherlands	2,951,662			878,713	
Czechoslovakia	790,918	863,992	-8.4	184,003	219,859
Total*	69.544.891	32.080.257	117.0	17.812.820	7.167.613

NAPHTHALENE: Tumbling severely, naphthalene shipments fell some 35% behind the 122 million lbs. that were imported in '55. Only West Germany, with a 4.8% decline, was able to hold losses relatively. Imports from most countries slipped between 33-55%.

West Germany	25.035.693lb.	26,285,679lb.	-4.8	1,449,272	1.522.576
Belgium-Luxemburg	17.272.552	25,915,099	-33.4	963,727	1,407,753
United Kingdom	12,735,377	19,491,598	-34.5	784,045	1,000,509
Poland	8.072.557	17,727,384	-54.4	477,445	944,989
Netherlands	6.030.689	13,467,899	-55.2	358,795	744,285
France	6,076,795	8,760,228	-30.6	278,297	454,103
U.S.S.R.	2,236,378	3,631,373	-38.5	73,820	186,011
Total*	78,855,362	121,615,749	-35.3	4,446,786	6,601,916

<sup>\*</sup>Includes shipments from countries not listed separately.

1956 totaled \$9.0 million vs. \$6.9 million in 1955. Scoring impressive gains were: natural menthol with 2.4 vs. 1.7 million lbs.; caffeine, 611,182 vs. 338,417 lbs. and medicinals of vegetable origin, \$969,274 compared with the previous year's \$122,785.

Pigments, Paints and Varnishes: Foreign exporters increased shipment value to the U.S. a staggering 52% last year. Total: \$9.5 million. Although some materials, like iron oxide and hydroxide dipped by about 6%, im-

mense boosts for litharge (616%) and for varnishes (143%) more than made up the difference.

Soap and Toilet Preparations: Two items set the pace here. Alcoholic perfumery last year forged 19% ahead of '55, rang the register for \$3.5 million. Aromatic mixtures contributed a 14% gain, some \$2.2 million, to foreign dollar balances of exchange. Only enfleurage greases showed a significant decline—down 24.7%. Total soap and toilet preparation imports \$8.9 million

topped 1955's by \$1.1 million.

Fertilizers: Undoubtedly reflecting the copious supply and static demand on the domestic scene, fertilizers fared worse in 1956 than 1955 by some \$8 million. But oddly enough, not all major commodities shared the fall-off. Compounded fertilizers ran \$1.3 million ahead of '55—a 102% rise. Ammonium sulfate checked in at 197,650 short tons; this was a sizable increase of 14%. Calcium nitrate and prepared mixtures also gained modestly. But the



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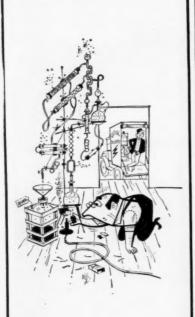
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#### Commodity Quantity Percent Dollar Value 1956 1955 Change 1956 1955

AMMONIUM NITRATE and MIXTURES: Resurgence is the big news for this commodity group. After a sharp drop for the past two years, ammonium nitrate imports increased 8% in 1956. Although Canada, the biggest shipper, lagged some 10% behind its '55 pace, the Netherlands posted an impressive gain. With 188,000 short tons, it almost doubled its '55 showing.

Canada	199.310s.t.	222.336s.	t. —10.4	\$12,758,057	\$14,677,769
Netherlands	187,961	97.005	94.0	7,881,398	4,074,969
West Germany	30,303	55,155	-44.9	1.311.334	2,335,914
Austria	11.022			364,998	
Italy	7,500	28,000	-73.2	257,907	1,108,802
Belgium-Luxemburg	860			38,700	
Total*	436,960	405,246	8.0	22,612,762	22,314,954

UREA: It typifies the general fall-off in fertilizer imports. Last year, 70,274 short tons came in, a drop of 11% from 1955. Of the three dominant countries in the import market, only Norway rang up a significant (54%) boost. An average value of \$86/short ton for Norwegian material, substantially below that of the U.K. and West Germany, may have been the reason.

11 % I W: I	20.022	20.050	22.4		3 070 000
United Kingdom	20,933s.t.	30,958s.t.	32.4	2,027,626	2,970,858
West Germany	21,243	25,956	-17.9	1,965,414	2,744,847
Norway	22,483	14,614	54.0	1,933,428	1,550,363
Italy	3.793	5.261	-28.0	299,859	501,029
Belgium-Luxemburg	1.355	714	90.0	86,305	73,577
Austria	284			20,895	
Total*	70 274	78 929	10.8	6 351 080	7 990 539

<sup>\*</sup>Includes shipments from countries not listed separately.

COLORS, DYES and STAINS—COAL TAR: The two largest factors in the market, Switzerland and West Gemany, fared less well last year then in 1955. But the United Kingdom, Italy, France and Cuba, though much smaller contenders, chalked up significant increases. Total dollar value (6.32 million) skidded to about 8% below the '55 level.

Switzerland	1.178.6681	. 1.442,186lb.	-18.5	3.656,974	5,107,875
West Germany	1.026,231	1,138,043	-9.8	2,378,398	2,348,784
United Kingdom	155.552	129,070	20.0	166,638	196,271
Italy	60,912	8,445	621.0	93,198	10,007
France	7.354	1,685	336.0	11,658	4,183
Cuba	1,371	1,150	19.0	4,720	3,680
Canada	582	3,824	-84.8	2,114	20,806
Total*	2,432,539	2,730,414	-11.1	6,318,623	7,701,447

POTASSIUM CHLORIDE: Mixed patterns prevailed for this salt. While West Germany and Spain upped exports to the U.S. some 40%, both France and East Germany registered substantial losses. Total imports (244,000 short tons) inched some 5% ahead of 1955 shipments.

West Germany	116,807s.t.	83,455s.t.	40.0	3,000,580	2,131,270
France	43,203	60,155	-28.0	1,281,257	1.687.364
East Germany	50,304	77,063	-34.7	1.259.346	1.952.999
Spain	27,338	20.063	37.0	762,271	480.361
Belgium-Luxemburg	4.766			146.693	
Netherlands	1.509	725	108.0	42,808	25.167
Total*	243,969	241,461	5.0	6,494,464	6,277,161

<sup>\*</sup>Includes shipments from countries not listed separately.

big volume items, sodium nitrate, ammonium phosphates and calcium cyanamid were down about 18% each.

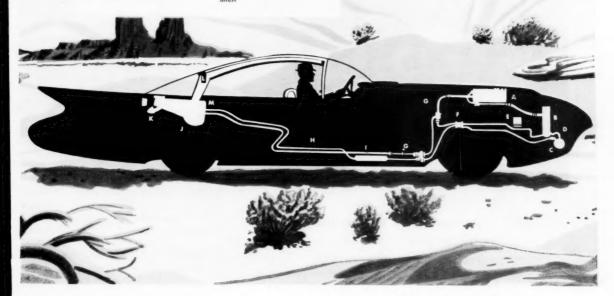
How the import situation for 1957 will be resolved is anybody's guess. But if the present increase rate continues, total '57 figures may reach close to \$300 million. That, of course,

would be added incentive for U. S. producers to clamor for more restrictive tariff regulations. Even though present domestic chemical sales tote up to more than \$24 billion, several hundred million dollars worth of foreign material can take the bloom off many sales records.

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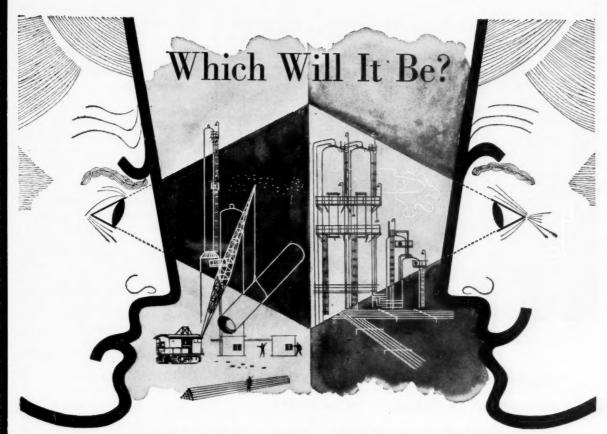


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#### DATA DIGEST

- Zirconium and alloys: 4-p. memo gives physical and mechanical properties for reactor grades of zirconium and two alloys. Data on fabrication, machining, grinding and corrosion resistance also included. Superior Tube Co. (Norristown, Pa.)
- Plastics standards: Compilation contains 40 specifications, 93 test methods, 19 recommended practices and 5 definitions for various plastics. Mechanical, thermal, optical and performance properties are described. 871 pp., \$6.00. American Society for Testing Materials (Philadelphia).
- Fungicide: Bulletin describes cordage preservation by means of colorless and nontoxic fungicide useful in water and other solvent systems. Separate data sheet also available on use of same product for paper and fabric mildew prevention. Heyden Newport Chemical Corp. (New York).
- Tall oil: Pamphlet outlines derivation and uses of tall oil, lists specifications for several grades. Welche, Holme & Clark Co. (New York).
- Industrial materials: Chart lists formula numbers, application facts, characteristics, color, solvents, solids contents, open time and other variables in using company's formulations for reclaimed and synthetic rubber, adhesives and coatings latices, and adhesives, sprays and coatings of plastics. Miracle Adhesive Corp. (Bellemore, L. I., N. Y.).
- Chemical shipping: Booklet suggests methods for using corrugated bulk containers for chemicals. Gaylord Container Corp. (St. Louis).
- Benzyl chloride: Properties, storage and handling techniques are presented in a new booklet. Uses are suggested in bactericides, fungicides, insecticides, preservatives, dyes, flavors, odorants, water-resistant starch, surface active agents, plasticizers, penicillin precursors and pharmaceuticals. Heyden Newport Chemical Corp. (New York).
- Auto fabrics: 53-p. report compares attitudes of manufacturers on fabrics and fibers for passenger cars. Covers study methods, fiber consumption, how the industry makes interior trim decisions, upholstery, sidewalls, headlining, convertible tops, foundation sheeting, cushioning, and thermal and sound insulation. Suggestions for improving use of cotton and wool are



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• Bulk trailer: 4-p. bulletin offers general specifications and description of new highway trailer designed for bulk transportation of pulverized and granular materials. Fuller Co. (Catasauqua, Pa.).

• Fluorinated hydrocarbons: 16-p. technical booklet describes properties and applications of fluorinated hydrocarbon solvents in such industrial cleaning jobs as immersion and vapor cleaning to general laboratory maintenance. Contains comparative data on performance of the fluorinated compounds, and of chlorinated solvents (methyl chloroform, carbon tetrachloride, trichlorethylene) and straight hydrocarbon solvents such as naphtha and gasoline. Du Pont (Wilmington, Del.).

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- Limestone: Bulk and carload shipments of agricultural limestone in transit from points in Ohio to points in New York, Pennsylvania and West Virginia. Grounds: short-line distance formulas and circuity. FSA No. 33595.
- Sulfuric acid: Tank-car quantities traveling from El Dorado, Ark., to Texas City, Tex. Grounds: circuitous routes. FSA No. 33579.

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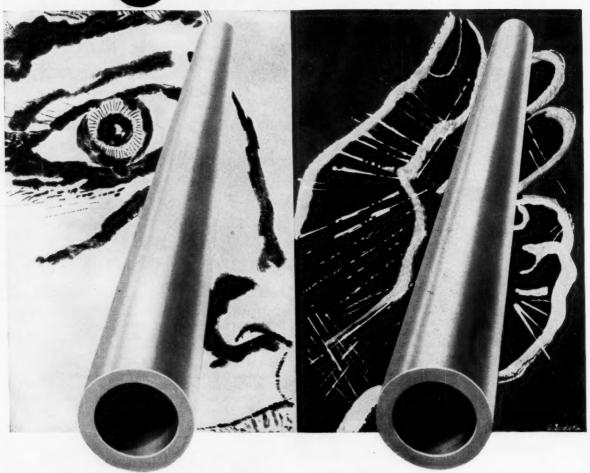
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# Look alike ... Feel alike But as different as day and night

It's a fact: Given the same raw materials, finished plastic pipe can be as different as day and night. The difference is in the techniques of compounding and manufacture.

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United States Rubber

# Technology

# Newsletter

CHEMICAL WEEK May 18, 1957 Amino acids have been synthesized from ammonium carbonate by exposing the latter to irradiation.

Three General Mills researchers reported this (Science, May 3). Amino acids, of course, have been synthesized before. But, as the General Mills team points out, they've always been made from substances that contained hydrogen or carbon in a partially reduced state.

They theorize that their experiments may shed some light on the origin of life. They think that the acids, which are essential ingredients of living tissue, could have formed by the action of radiation during the early days of the earth. Radiation levels then were much higher than they are now. With the help of rain and ocean currents, the amino acids formed from simple inorganic and organic substances could have migrated to depths where they would be shielded from further exposure to radiation (which can destroy, too).

Ceramic fuel elements composed of a mixture of oxides of thorium and uranium are being made for the first time by Argonne National Laboratories. Argonne scientists spoke of their work last week at the annual meeting of the American Ceramic Society in Dallas. Said they: "Both uranium oxide and thorium oxide have been used in ceramics for many years, but the use of thorium and uranium oxides as nuclear fuels has not been tried before." It had been known previously that Babcock & Wilcox was doing research on ceramic fuel elements utilizing uranium oxide and thorium oxide mixtures (CW, April 13, p. 66).

A new liquid-liquid extraction process for recovering niobium in a highly pure concentrate from Canadian pyrochlore has proved technically feasible in laboratory-scale operation at Canada's Mineral Dressing and Process Metallurgy Division (Ottawa). It's hoped that the new technique will be sufficiently economical to permit commercial upgrading beyond the 3-20% Nb<sub>2</sub>0<sub>5</sub> limit of present beneficiation methods.

The process utilizes a hydrofluoric-nitric acid mixture comparable to the HF-H<sub>2</sub>SO<sub>4</sub> combination used in the Bureau of Mines' latest liquid-liquid extraction (*CW Technology Newsletter, Sept. 29, '56*). The pyrochlore—complex oxides of sodium, calcium, niobium and tantalum—is decomposed in acid solution adjusted to 7M hydrofluoric, 5M nitric. Niobium and tantalum values are then extracted with methyl isobutyl ketone.

Mixed oxides of the metal are recovered from the organic phase and dissolved in a second, weaker, acid mixture (0.5M HF, 1M HNO<sub>3</sub>) from which tantalum is extracted preferentially by re-extraction with methyl isobutyl ketone. Under laboratory conditions, the process has produced niobium and tantalum pentoxides of 99.5% purity at recovery rates of 95%.

# **Technology**

# Newsletter

(Continued)

Two novel features in waste-gas stack design have been incorporated into the 325-ft. stack-within-a-stack erected at Hoechst's (Germany) oleum plant. The first consists of glass blocks built into the outside brick jacket. Purpose: to admit light to the annular space, which must be entered periodically for inspection and repair. The second is an extension of the inner, free-standing stack of acid proof brick, to raise it 15-20 ft. above the top of the outer stack. The added height is intended to reduce damage caused by downdrafts of corrosive waste gases.

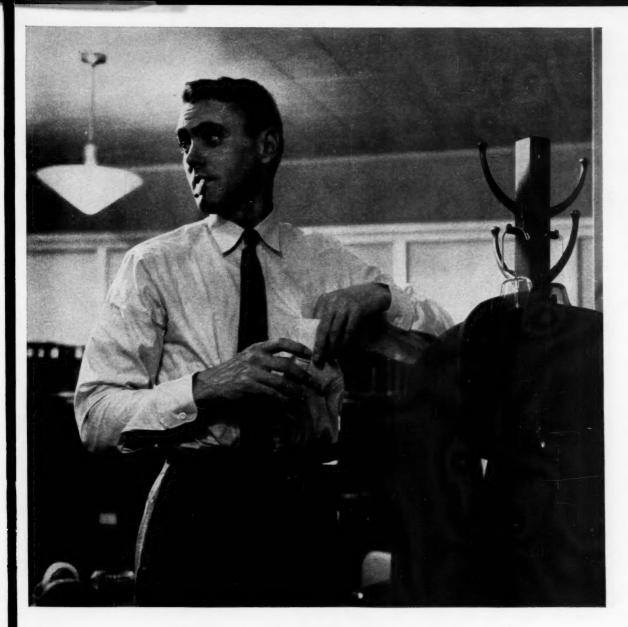
The 325-ft. stack may set a new high in sulfuric plants. In the U.S., for instance, the 250-ft. sulfuric stack built by Consolidated is considered to be a real skyscraper. The Consolidated stack, however, was prefabricated from steel, raised and welded together.

Capacity of American Potash & Chemical's new decaborane pilot plant at Henderson, Nev. (CW Technology Newsletter, May 11) is about 1 lb./day. The compound is priced at \$600-800/lb. in developmental quantities, but Ampot foresees an eventual price of under \$100/lb. in commercial quantities. The process utilizes boron trichloride as an intermediate in the formation of diborane. The latter is pyrolyzed to pentaborane and decaborane. The pyrolysis can be controlled to favor production of either penta or deca, though mixtures are produced in either case.

Ampot is not offering pentaborane at present. Possible uses of the decaborane (price aside) are as a rubber accelerator, reformer catalyst, polymerization catalyst, boron-polymer intermediate, and, of course, as a high-energy propellent.

Other news out of Ampot. The firm's \$750,000 mixed alkali plant went onstream at San Antonio, Tex. Operated by subsidiary San Antonio Chemicals, the plant turns out a potassium-rubidium-cesium product, tradenamed Alkarb. SAC is investigating processes for separation of rubidium and cesium, seeking uses for these materials. Cesium's extremely low ionization potential is of particular interest in research on ion propulsion systems. Ampot has also started full-scale production of boroxines and borate esters at its new several-tons/day plant in Los Angeles.

High-energy fuels were in the limelight at this week's meeting of the Commercial Chemical Development Assn. in French Lick, Ind. Olin Mathieson's Earl Weilmuenster revealed his firm's hopes that "the day will not be far off" when such fuels are available for civilian as well as military uses. Weilmuenster described diborane (see above) as "conveniently prepared" by reaction of lithium hydride with boron trifluoride etherate; he also tabbed a new OM fuel as being "superior or about equal to JP-4" in important properties.



# Every pass he makes is forward

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# PRODUCTION

# German Acetylene Processes

Company	Process	Raw Materials	Products	Status
Farbwerke Hoechst	Pyrolysis of petroleum by:  1) Hot coke cracking of high-boiling fraction (Hoechster Koker)	Crude or heavy residual oils	Ethylene, propylene	Not commercial
	2) High-temperature py- rolysis of low-boiling fraction	Naphtha, gasoline and gas oil frac- tions	Acetylene, ethylene and aromatics	Ready for use in large-scale production*
	3) Intermediate-temper- ature cracking of ethane, propane from hot-coke and high- temperature pyroly- sis	by-products of	Ethylene, propylene, methane and hydro- gen	
Badische Anilin- & Sodafabrik	Oxythermal furnace**	Limestone, coke	High-purity calcium carbide, carbon monoxide	
Chemische Werke Huels	Electric arc	Natural gas	Acetylene, hydrogen and hydrocarbons	Commercial

<sup>\*</sup>Hoechst subsidiary, Knapsack-Griesheim AG., has piloted pyrolysis with an oxyhydrogen flame, has under laboratory development an electric arc process.

# Germany Swings to Acetylene from Oil

At last month's German Plastics Industry Conference, Farbwerke Hoechst disclosed a new process of making acetylene and ethylene directly from petroleum. Typifying Germany's efforts to build up its petrochemical industry, the new method is aimed at boosting acetylene output by utilizing crude oil in place of costlier coal and electric power. And despite a number of technological difficulties, the process is, according to Hoechst's Karl Winnacker, "at a stage where large-scale production can be started soon."

Actually, Hoechst's approach to cracking petroleum depends on a combination of pyrolyses. The first is the Hoechster Koker process for

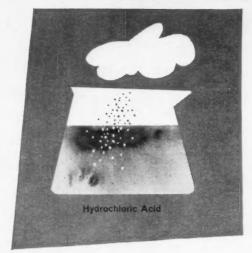
converting the high-boiling fractions into ethylene and propylene by spraying them on a moving bed of hot coke. The second-and probably the one with the best chances for commercial success-is a high-temperature conversion of light petroleum fractions (naphthas, gasoline and gas oils) into acetylene and ethylene by pyrolysis in a methane-oxygen flame at 1200 C. The third is a mediumtemperature (1000 C) pyrolysis of the by-product ethane and propane from the first two cracking operations to yield methane, hydrogen, ethylene and propylene.

Fuel Oil Short: Many U.S. experts don't concede the Hoechster Koker process much chance of success. They feel it's not the most economical way to utilize crude oil and heavy residuals that—in Germany, at least—find a greater demand for use in the production of fuel oil. For another thing, the hydrogen-to-carbon ratio of constituents in the high-boiling fraction is too low to produce high yields. There just isn't enough hydrogen.

Light petroleum fractions, on the other hand, have a higher hydrogen-to-carbon ratio, are more generally available on the European market. For example, Hoechst subsidiary Knapsack-Griesheim AG. (which is also one of Germany's largest producers of calcium carbide by the conventional electric furnace method) expects to get ready supplies of low-

 $<sup>{}^{\</sup>bullet\bullet}{\rm BASF}$  also produces a small amount of acetylene from natural gas by the Sachse process for acetone synthesis.

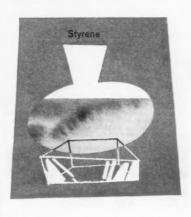
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# CHEMICAL WEEK **BUYERS' GUIDE**

Published September 14 Closing ROB July 1 Catalog Inserts August 1

# PRODUCTION

boiling gasoline products from such new Rhine district refineries as those planned by Esso, BP Benzin & Petroleum GmbH. and Deutsche Purfina, GmbH.

Knapsack is currently studying, on a small scale, the cracking of lowboiling olefins to acetylene, utilizing the recombination heat of hydrogen produced by a carbon-electrode arc. An alternate method of cracking, involving the use of an oxyhydrogen flame, has already been operated in a small pilot plant. Here, in general, is how pyrolysis of low-boiling petroleum works:

Distillation products are injected into a metal burner, heated to 1200 C by the combustion of methaneoxygen fuel. The resulting gaseous products-acetylene, ethylene, carbon monoxide, etc.—are cooled by water; by-product aromatics are removed by distillation. Acetylene is separated from the mixture by washing with a solvent; ethylene, by low-temperature distillation. Ethane and propane may be sent to a second cracking unit for pyrolysis at 1000 C to produce methane, hydrogen, ethylene and propylene. By-product gases are recovered, used as fuel to the burner.

Acetylene yield of the new process is said to be 50-60%. The addition of ethylene yield, says Hoechst, brings over-all efficiency of the process to about 90%

Oxythermal Route: A recent update of Badische Anilin- & Sodafabrik's oxythermal carbide process (CW, May 12, '56, p. 60) indicates that it can be more profitable than any other carbide process. It's profitability is unquestionable only if there's a ready market for the high-purity carbon monoxide produced in the oxythermal furnace.

The oxythermal method, essentially a gasification process in which the carbide is produced as a by-product. requires an input of about 3250 kwh. to make a ton of carbide-about the same as an electric furnace. Reaction temperature is generated by the combustion of excess coke in oxygen (39,000 cu. ft. of oxygen are required per ton of carbide). Recovery of the concurrently produced 81,000 cu. ft. of pure carbon monoxide (for subsequent use in chemical synthesis) is an important factor in the oxythermal furnace economics, since it boosts over-all efficiency to 80%.

Refuting claims that the crystalline structure of oxythermal carbide isn't suitable for the production of calcium cyanamid, BASF states that both purity and crystalline structure of the product can be controlled to that required for the cyanamid reaction. BASF's confidence in the oxythermal route is evidenced by its plan to supplement its present 70 tons/day pilot unit with a 250 tons/day commercial production furnace.

Partial Oxidation: BASF also produces a small amount of acetylene from natural gas by the Sachse process. However, this operation is limited to quantities required for acetone synthesis, is not as large as the Sachse installations in this country (American Cyanamid, Monsanto, Rohm & Haas, and Union Carbide).

A newer process for making acetylene from natural gas is the one developed by Societe Belge de l'Azote (Liege, Belgium), available in this country from Blaw-Knox Co.'s Chemical Plants Division. A modification of the Sachse partial-oxidation process, the SBA process is said to achieve higher efficiency, to eliminate many of the production problems that plague other pyrolysis processes.

The key to SBA's technique: an improved burner designed for delayed introduction of hydrocarbons, higher feed preheat. This minimizes carbon formation which can be a big headache in this process. Yields with hydrocarbons to C6 reportedly run 30% or a little higher. With heavier hydrocarbons, yields of mixed acetylene and ethylene are said to run about 60%. The latter is important in Belgium because acetylene costs can be cut almost in half by taking credit for the ethylene.

The SBA process, by using liquid ammonia in place of high-boiling solvents in the acetylene purification step, Blaw-Knox reports, avoids the use of expensive solvents. And, says B-K, it also eliminates difficulties usually encountered with diacetylene polymers, produces a cleaner product.

Electric Arc: Still another method of making acetylene from natural gas is the electric arc process introduced some time ago by Chemische Werke Huels. Developed by Paul Baumann of the former I. G. Farben plant at Oppau, it utilizes a 7800 v., 850-900 amp. d.c. are to convert methane into acetylene, hydrogen and hydro-



One machine to handle
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# Illinois fertilizer plant buys Michigan's quarry-proved dependability

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Hoover's problem was to find a machine which by itself could handle all material in their bustling 20-year-old fertilizer plant. It had to be fast and versatile and, above all, as trouble-free as possible. Their study of available units included the usual comparison of specs, talks with salesmen and users, pricing, and so on.

# Power Shift, Torque Converter

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"Our ultimate choice was a Michigan Tractor Shovel!" says Owner Roy Hoover.



Loading bagged mixed fertilizer onto truck, Michigan often lifts 18 bags (1,440 lbs) at once.

"There were lots of reasons. But the clincher came the day we learned that our neighbors, Lehigh Stone Company of Kankakee had changed to Michigans and were very happy with them. If a Michigan could work satisfactorily under the constant use of their quarry, we reasoned it certainly would do well on our less-punishing job. The size we wanted, Michigan's 15 cubic foot Model 12B, we noted had many of the same design features as the larger quarry-model Michigans (including power-shift, torque converter, planetary axles). So we got it—and it's done even better than we hoped."

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# PRODUCTION

carbons. About 60% of the electrical energy is converted into chemical energy. Methane conversion is about 50% per pass; unreacted gas is recirculated to the reactor after distillation.

Biggest drawback to the electric arc process is the tremendous electrical energy requirement. Each of Huels' 17 furnaces requires as much power as five locomotives. To meet this need, Huels had to build a power plant ranked among Europe's largest and operated in conjunction with the public power supply network. The plant supplies power to the net during the day, produces acetylene at full capacity during the night when additional power is available from the public supply.

Though Huels continues to operate its existing facilities, U.S. technicians generally consider the electric arc process too costly to be competitive with the other methods of making acetylene from natural gas.

Economic Incentive: Major impetus behind Germany's search for new routes to acetylene is the one-sided fuel economy existing in that country. German industry relies on coal for 94% of its raw material and fuel requirements. Natural gas and oil supply the remaining 6%—of which one-third goes into chemicals. German acetylene and ethylene production is based 88% on coal, only 12% on petroleum. And its aromatics (benzene, toluene and xylene) are made 100% from coal.

Development of alternate routes to these chemical raw materials from petroleum sources is certain to make the already-efficient German chemical industry a good deal more adaptable.

# **Short Cut to Uranium**

Uranium processors are congregating this week at Denver's Cosmopolitan Hotel for a Mill Technology Symposium being held in conjunction with the annual meeting of Uranium Institute of America (Grand Junction, Colo.). One of the highlights of the meeting will be a rundown by Dow Chemical Co.'s Richard Bailes on the solvent-leaching of uranium ore.

Though present activities in uranium processing are based, for the most part, on conventional ion exchange and on a steadily increasing number of solvent extraction techniques (CW, March 30, p. 73), direct solvent leaching of uranium ore is attracting much attention. Reason: it offers the dual advantage of sidestepping many of the troublesome steps required in conventional recovery operations, of eliminating the use of water-a scarce commodity throughout most of the uranium-rich Colorado Plateau.

Three to Get Ready: The aim of direct solvent leaching is to extract uranium by percolating a solventdilute acid system through the ore on a perforated or porous moving belt. AEC is currently studying three processes—one developed by its own Raw Materials Laboratory (Winchester, Mass.), one now in the laboratory-stage of development at Dow's Western Division (Pittsburg, Calif.), and a third worked out by Battelle Memorial Institute.

Furthest along toward a commercial tryout is the AEC-developed method which has been operated on a pilot scale by MIT, American Cyanamid and National Lead Co. Utilizing tributyl phosphate and 70% nitric acid, it recovers extremely high-grade (about 98% U<sub>3</sub>O<sub>8</sub>) concentrate. The Battelle process has also gone through extensive pilot testing, but appears to have less to recommend it for commercial consideration. Weaknesses: cost of reagents (acetone and hydrochloric acid) is higher than other systems, product is of lower quality (about 20% U3O8).

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Though Dow's process is still under preliminary evaluation, it seems to be the most promising of the three routes. It uses an alkyl phosphate solvent (specifically, octyl phosphoric acid) and sulfuric acid, with hexane as a diluent. Using 5% OPA in hexane, it recovers about 85% of the uranium present in the ore, with a solvent loss of only 2 lbs./ton of ore. One disadvantage: it's suitable only for certain ores, such as carnotite, in which uranium is less tightly held than it is in primary ores.

The mining industry's unfamiliarity with handling of hazardous, low-boiling solvents is a hurdle that direct solvent leaching has yet to overcome. But with the growing importance of chemical processing in the production of scarcer metals, uranium producers will likely base their decisions on chemical, rather than physical, considerations.



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ILLCO'S REENTS AND CASKEY: They clamped a lid on the resin bed.

# **Upflow Cuts Water Costs**

Some long-standing ion exchange theory has been put to profitable practice by the Illinois Water Treatment Co. (Rockford, Ill.). Counterflow regeneration was developed to allow use of upflow in regenerating cation units in multiple-bed water deionization systems. The mechanical gimmick: using a falling stream of water as a lid to confine the resin bed.

Put into use for the first time last September, the process has improved the quality and reduced the cost of deionized Missouri River water being supplied to the Omaha Public Power District's Jones Street Station steam generating plant. A second power plant installation-at the Russell Station of the Rochester Gas and Electric Co .-- has already been made. And IWT has nine others at various stages of development. Permutit Co. (New York) says it has been researching the principle for the past year, and that it is prepared to offer a system based on it.

Illco stresses the fact that its regeneration system is a natural for power plants since it cuts sodium leakage to a minimum, thus giving the anion units a chance to remove silica. (If sodium leakage is high, the silica that usually accompanies it gets through the anion unit, winds up be-

ing deposited as hard-to-remove silicate scale on turbine blades.)

Other Uses: It's still too new to have been explored for other chemical process applications. Counterflow, research indicates, may be applied to anion exchange reactions successfully. But data is still inconclusive.

It's doubtful that the system will make great inroads into chemical production by ion exchange—glycerine purification, treatment of formaldehyde solution for formic acid removal, sugar demineralization—unless product purity can approach that from mixed-bed units. Illco is making no claims here, points out that mixed-bed units are still tops where extreme product purity is required.

Users generally shy away from mixed-bed units, though—cost is higher and operation more complex. So when a mixed-bed unit is not absolutely essential, the new system may be the answer to improved operations.

Upflow Best: Counterflow regeneration is designed specifically to reduce cation leakage. By clamping a lid on the resin bed, it takes advantage of chemically superior upflow regeneration, overcomes the mechanical disadvantages.

Until Illco came up with the system, upflow regeneration was rele-

gated to a back seat. Unlike greensand and siliceous zeolite, the newer ion exchange resins are of low density. An upflow of dilute regenerating acid through the bed causes expansion, channeling. This reduces intimate contact between resin and acid, gives low capacity and poor quality effluent during the service cycle.

Downflow regeneration keeps the bed packed. But by the time the acid reaches the bottom of the bed, it has lost its driving force, contains large amounts of sodium and other cations. This leaves an incompletely regenerated band of resin near the bottom of the column. And, during the service cycle, since this bottom band of resin still contains some sodium ions, leakage occurs immediately, then gradually decreases until the bed is exhausted, at which time it again breaks through. Upflow regeneration pushes the sodium band to the top of the bed, prevents leakage until break-through at exhaustion.

Realizing the advantage held by upflow regeneration, Illco went to work about two years ago to solve the mechanical problem. Curt Reents, director of research, and Harold Keller hit upon the idea of confining the bed by capping it with water. A layer on top of the bed didn't work too well. But opposing the acid upflow with a stream of water directed downward through the column's free-board space turned the trick.

Commercial Scaleup: It remained for Paul Caskey, engineering vicepresident, to translate the research findings, put them into practice on a commercial scale.

A pipe was inserted into the column at the top level of the bed and at right angles to it. Small holes in the pipe draw off the water and dilute acid streams. To prevent resin particles from being carried along, a screen is placed around the pipe.

By adjusting the water and acid flow rates (usually about 1:1, or as high as 3:1 in extreme cases) bed expansion can be held to an insignificant amount, says Caskey. The water downflow is continued during the displacement rinse that follows acid regeneration. Before the service cycle is begun, a downflow rinse insures a packed bed.

Rinse volume is small—30 gal./cu. ft. was reported for test runs. Quantity of unexchanged cations in the

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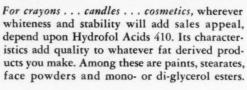




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# PRODUCTION

effluent drops rapidly at the start of the service cycle. A conductivity of about 10 micromhos is recorded, compared to about 18 micromhos for conventional regeneration after 10% of the cycle, starting with water of 25 micromhos.

Acid Saver: Counterflow regeneration's biggest advantage is in the quantities of acid required. Cation leakage is one-fourth to one-third that for conventional regenerations when 6 lbs./cu. ft. acid levels are used in both systems. During test runs on two-bed units (cation followed by anion) 7.4 lbs./cu. ft. acid level gave water of higher purity than 11 lbs./ cu. ft. acid level using conventional regeneration. Actual choice of acid level depends on which of the factors—effluent quality or operating cost reduction—is most desired.

Too, each case requires study—for example, water with high alkalinity, but low soduim, is easily demineralized using conventional regeneration and moderate acid dosages. But if the new regeneration system is justified, two- or multiple-bed systems are readily converted. Only the cation units and certain piping require modification. And, most cation resins will work with the system. These features should help it to catch on quickly.

# EQUIPMENT

Electrolytic Hygrometer: A new panel-mounted electrolytic hygrometer for continuous, automatic measurement of water vapor in plant process streams is offered by Beckman Instruments' Process Instruments Division (Fullerton, Calif.). The current reguired to electrolyze the moisture absorbed from the sample stream gives a measurement of the water present with a 5% accuracy in the 0-1000 ppm. range at temperatures to 100 C, says Beckman. The unit has a built-in alarm system. Standard potentiometric recorder or recorder-controller (10 or 50 millivolt) can be operated from hygrometer output.

Magnetic Tape System: Davies Laboratories Division, Minneapolis-Honeywell Regulator Co. (Beltsville, Md.) has introduced its Universal Tape System, a complete magnetic tape data recording system which, it says, satisfies the majority of analog data needs at far less cost than com-

parable custom systems. Individual systems are built up by combining standard transports, heads, etc., in standard racks, will carry data recorded by direct, FM and Pulse Width Modulation methods. The transport is available for 1- or 1½-in. tape on 10½- or 14-in. reels. The 1½-in. tape will carry up to 15 tracks.

Conveyor Chain: Ny-Steel flat-top roller chain combines nylon and steel in a conveyor chain that resists chemical attack. The chain, which doesn't stretch under load, weighs less than half as much as similar all-steel chains, says Link-Belt Co. (Philadelphia). The chain is supplied with nylon top plates and either carbon-steel or stainless-steel chain.

**Squeegee Pump:** The Randolph Co. (Houston, Tex.) is the latest to offer a pump that kneads fluids through a flexible tube (CW, Sept. 24, '55, p. 70; July 21, '56, p. 92). Pump intake and outlet are part of a continuous tube that passes through the pump body. Rotary squeegee forces the fluid through the pump. A variety of tubing materials are available for different liquids.

Heat Exchanger: A new line of standardized, mass-produced heat exchangers, called Hi-Transfer Exchangers, is available from the Whitlock Manufacturing Co. (West Hartford, Conn.). The wide range of sizes is of straight-tube design, is said to assure maximum heat transfer with minimum pressure drop. Shell and tubes working pressure: 75 psi., tested at 115 psi.

Leak Detector: Detection and location of leaks smaller than 2 cu. in./year of gas is the claim of NRC Equipment Corp. (Newton Highlands, Mass.) for its model 4902 Vacuum Leak Detector. The halogen-sensitive unit is connected to the system under test. After the system has been evacuated to 80-200 microns pressure, it is blanketed with Freon-12 tracer gas. Unpredictable slow-shift of "no-leak" signal is eliminated by measuring the rate of change of signal rather than its absolute value.

**Survey Recorder:** The Bristol Co. (Waterbury, Conn.) is out with a new self-contained portable millivoltmeter-



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\*"That property of a body in virtue of which, when flow occurs inside it, forces arise in such a direction as to oppose the flow." — Webster

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# PRODUCTION

recorder that incorporates a wide variety of ranges for surveys involving measurement of voltage and current (e.g., corrosion surveys). The instrument records a white dot on an 8-in. diameter carbon-coated chart with a stylus powered by two flashlight cells. Left unattended, it will take continuous records for one week. Recorder is weatherproof, weighs 25 lbs.

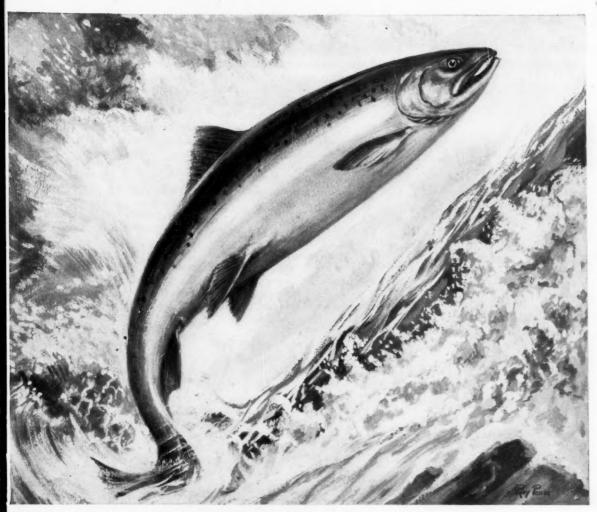
High-Pressure Union: Clayton Mark & Co. (Evanston, Ill.) has added a new Petro 6000-pound union to its line of conventional 3000-pound CWP forged-steel unions. Available in nine sizes, in threaded and socket-weld types, the union has a rated steam pressure of 1500 psi.

Inspection Labels: New self-sticking vinyl-cloth and aluminum-foil labels that take pen, pencil or typewritten information, stick to any clean dry surface, are offered by W. H. Brady Co. (Milwaukee, Wis.). The labels are mounted on a 9-in. card that functions as a portable writing board. Special labels can be made to customer's specs; 18 different types are carried in stock.

Incinerator: For smokeless disposal of combustible liquid waste materials, Prenco Products, Inc. (Hazel Park, Mich.) recommends its new model SF-1 industrial incinerator. The upfired retort-type unit is of refractorylined steel, provides full combustion at temperatures above 3000 F. Designed specifically for paint sludges, thinners, oils and solvents, it will handle materials of any viscosity range between air-setting waxes and gasoline, says' Prenco. Rating: 1.9 million Btu/hr.

Distillation Trays: From England comes word that Metal Propellers Ltd. (Croydon, Surrey) has patented (E.P. 742,284) a new distillation tray developed from Shell's Turbogrid. The design, similar to Southwest Engineering's (Los Angeles) modification (CW, July 14, '56 p. 72), replaces the normal bars or slotted plates with tubes.

Temperature Control: The Dean Thermo-Panel Coil Division of Dean Products, Inc. (Brooklyn) reports that its new duct system simplifies temperature distribution on all sides of a traveling conveyor belt. Suitable for either heating or cooling applications,



# Upstream!

Most people watching a salmon swim upstream wonder how he does it. Seems like a lot of exertion to move from one wet spot to another. To the salmon, though, the compulsive drive upstream cannot be denied.

The titanium industry also has been fighting upstream these past five years. A succession of production rapids and metallurgical waterfalls have been surmounted. The dangerous hydrogen whirlpool was successfully skirted. The industry has now moved through the less white headwaters to fully competitive equality with other structural metals.

Titanium alloys of high strength, light weight

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Further expansions of sponge production and metal finishing facilities at T.M.C.A. are bringing titanium within reach of an ever-expanding market. Technical information and specialized engineering services are available for solving those applications having a strength, weight or corrosion challenge.



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#### PRODUCTION

the duct replaces pipe coils with standard Thermo-Panels embossed to create flow channels through which heating or cooling media can be circulated. By eliminating the need for special jacketing or sheet metal outer duct, the Thermo-Panel unit simplifies installation, says Dean, weighs less and costs less than old-style pipe coils. Units can be made with stainless steel inside, carbon steel outside; jointed sectional construction facilitates installation of ducts of any length.

Gas Chromatograph: One of the first offerings of the newly opened Westdahl Instrument Co. (Millington, N.J.) is a new analysis and control unit for gas chromatography. It's designed for analysts desiring to make their own columns and means for adding small samples. Price: \$300.

King-Size Pump: A 6-in. Granco rotary positive-displacement flanged pump is now in production at Granberg Corp. (Oakland, Calif.). Designated as model HG-6, it handles capacities to 225 gpm. of hot asphalts, to 350 gpm. of gasolines and fuel oils. Available in steel construction for hot asphalts and other viscous products at temperatures to 600 F and in cast iron for lighter products, HG-6 operates at pressures to 70 psi.

Flume Unit: For accurate measurement of sewage flow, Penn Instruments Division of Burgess-Manning Co. (Philadelphia) offers its new type ML Parshall Flume meter. Recording meter may be located at any distance up to 3500 feet from the flume and requires power only at the receiver. ML meters will be mass-produced as stock items; transmitter and float mechanisms will be custommade to suit established dimensions of Parshall Flumes. Unit is also adaptable to flow measurements across weirs or through open flow nozzles.



# **New Coating Simplifies Cleanup**

A hot water wash is all that's needed to remove radioactive salts from the walls of Brookhaven National Laboratory's water treatment building. Reason: the pores of the concrete blocks have been sealed with the new Ceramix coating developed by Preco Chemical Corp. (Farmingdale, N. Y.). The custom-

applied material combines a specially formulated cement base coat with a tough epoxy exterior to give an impervious, highly glazed surface. Preco offers the coating for wall protection to chemical and food processing plants as well as to atomic installations. Cost of Ceramix, Preco reports, is ½-½ that of ceramic tile.

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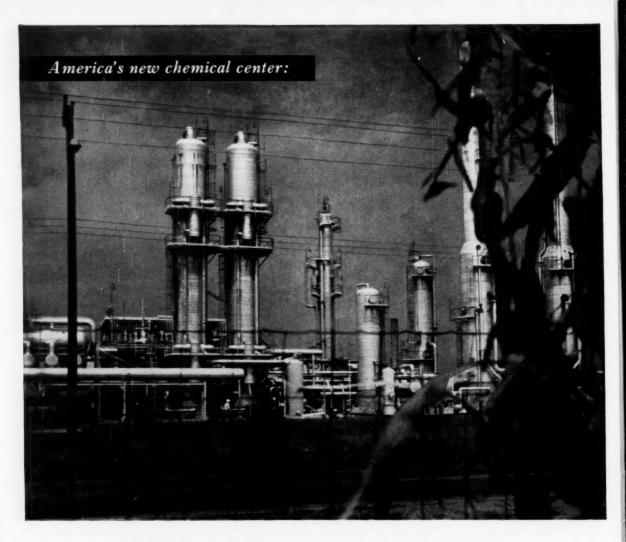
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# Market Newsletter

CHEMICAL WEEK May 18, 1957 Despite a hectic week of price-changing activity in the metals segment of the nation's marketplace, the reduction—in copper, zinc and lead—came as no surprise to trade followers.

The new  $\frac{1}{2} \frac{e}{l}$ lb.-lower tag on custom smelters' copper (down to  $30\frac{e}{l}$ ), was predicted as far back as February (CW Market Newsletter, Feb. 16). The  $1\frac{1}{2} \frac{e}{l}$ lb. cut in zinc, which brings the price down to  $12\frac{1}{2} \frac{e}{l}$  (E. St. Louis), was indicated as a probability by many after recent reports that the government might cut back purchases for its strategic stockpile.

The  $\frac{1}{2} \frac{e}{l}$  b. paring of domestic lead prices last week (now down to  $15\frac{1}{2} \frac{e}{l}$  b., New York) was influenced by the same report that the government would probably withdraw from the market. Further, though, a major lead producer tells CW that pressure was also applied by a decline in the London lead market—the latter inspired by talk that the U.S. would halt its program of "barter contracts."

The noticeable lag in consumer demand, and growing metals stocks (at the producer level) were also no help in attempts to maintain previous price schedules.

Cuts in lead oxide prices are now in effect—they're the second in less than a month (CW Market Newsletter, April 20). The new declines, amounting to  $\frac{1}{2} \frac{\varphi}{|}$ lb. on dry red lead, litharge, and orange mineral, are related to the pig lead change. (That was not so in the earlier reductions, which caused some puzzlement among pigment consumers.)

New c.l. price for dry red lead (95%) is  $17\frac{3}{4} \frac{\phi}{\text{lb.}}$ , and for litharge,  $17\frac{1}{4} \frac{\phi}{\phi}$ , with l.c.l. prices a penny higher on both. Orange mineral (l.c.l.),  $21\frac{1}{10}\frac{\phi}{\text{lb.}}$ 

Price cuts on germanium are measured in dollars, not pennies. Sylvania Electric Products last week slashed prices by about 10% on its germanium and dioxide. New tag on purified polycrystalline germanium is \$435/kilogram (down \$50/kilogram), and \$250 kilogram on the dioxide. The latter was previously priced at \$275.

These expansions are making news:

- Diamond Alkali's completion (at Deer Park, Tex.) of production facilities that will double capacity to turn out perchlorethylene and anhydrous hydrochloric acid. Just about complete, too, is a doubling in capacity of its polyvinyl chloride plant.
- Also doubled is Dow's production capacity for its rigid foam material, Styrofoam. Now in full operation are just-completed additions at Riverside, Mo., and Ironton, O., plants.

# Market

# Newsletter

(Continued)

- High-purity (99%) carbon monoxide, albeit in research quantities only at first, will soon be produced at The Matheson Co.'s newly opened pilot plant (East Rutherford, N. J.).
- North of the border, at Hinton, Alberta, production has started at a new 150,000-tons/year pulp mill. The \$42-million venture, jointly owned by North Canadian Oils (Calgary) and St. Regis Paper (New York), will produce Alberta's first bleached sulfate pulp.

How to induce private industry to build needed helium expansion in the U. S. is a problem Interior Secretary Fred Seaton and his top aides hope will be solved by a new long-range helium policy now in the works. Seaton also hopes the set-up will end the government's long-time production monopoly.

Chances are, though, that it'll be months—maybe longer—before major decisions will be made; and even then it may turn out that the Bureau of Mines will have to build the needed helium capacity itself. Major hurdle: private industry has shown no interest in producing helium as long as the government remains the major consumer. Currently only about 30% of all consumption is "commercial," but most of that has defense overtones—welding of jet engines, for example.

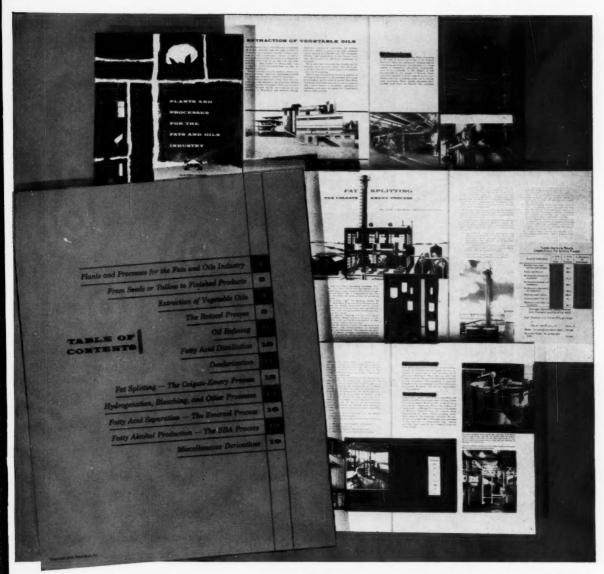
Government production of helium hit a record (though still shy of requirements) 224-million cu. ft. last year. An 85-million cu. ft. expansion at Exell, Tex., due in this month, plus an additional 80 million from modernization to be completed by late December, should bring supply and demand into balance. The respite will be temporary, however, and Seaton is counting on the breather to develop his long-range expansion program.

Newly named Union Carbide Chemical is making a methanol splash in the West. With just-completed terminal facilities available at San Pedro, the company is establishing an f.o.b. terminal bulk price of  $32\frac{1}{2} \oint a$  gal. on the material. It's the first such tag on the West Coast; hitherto best bulk methanol price in that section of the country was a  $35\frac{1}{2} \oint gal$ . tank-car price.

# SELECTED PRICE CHANGES - WEEK ENDING MAY 13, 1957

DOWN		
	Change	New Price
Lead metal, pigs, prime, New York	\$0.005	\$0.155
Tin metal (Straits)	0.00625	0.98375
Zinc metal, prime Western slabs, E. St. Louis	0.015	0.12
Zinc metal, prime Western slabs, New York	0.015	0.125
Zinc dust, pigment, bbls., c.l., wks.	0.015	0.16

All prices per pound unless quantity is stated.



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# Ups and Downs of the Fatty Acids Business

Although official government figures on consumption\* of fatty acids won't be out until next month, trade observers estimate that the total (saturated and unsaturated) factory use will tally close to 390 million lbs. That tops '55's figure by some 8 million lbs., but is slightly under the estimate for this year—about 395 million.

The growth of these materials as important intermediates, is highlighted by the fact that some thirty years ago, fatty acids (other than stearic) were considered merely as contaminants of fats and oils.

So dependent have fatty acids become in various industries, that fluctuations in any important end-use is directly reflected in production curves of the acids. This explains the often erratic up-down characteristics of fatty acids output (see chart).

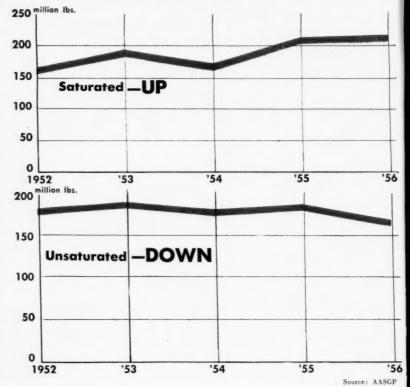
Most noticeable trend in consumption, though, is the increasing demand by consumers for hydrogenated fatty acids.

The industry's data and fact-gathering group, fatty acid division of Assn. of American Soap and Glycerine Producers, says that in '54 saturated acids were produced at a rate of about 175 million lbs./year, while unsaturated material turned out amounted to some 188 million lbs. Last year saturated acids swept into the lead with 228 million lbs. produced, compared with not-quite 178 million for unsaturated acids.

Government-Industry Discrepancy: Although there is some disagreement in production data as reported by the association and those issued by the Commerce Dept.'s Bureau of the Census, the differences—though confusing—are easily explained. Government statistics report all fatty acids produced, including those used as intermediates in other products; the AASGP reports only fatty acids captively consumed and commercially available.

Other factors involved: some differ-

**U.S. Production of Fatty Acids** 



aturated Production (million lbs.)	1952	1953	1954	1955	1956
Stearic acid, (40-50% stearic)	47.8	59.3	50.2	57.5	55.5
Other stearic acids,		**			
hydrogenated animal and		•			
vegetable fatty acids	65.5	89.3	85.5	106.4	106.2
High palmitic	5.4	6.1	4.4	5.7	6.8
Hydrogenated fish and					
marine mammal	14.5	16.1	12.5	20.7	18.6
Lauric-type acids	31.5	20.4	18.1	17.0	20.9
Other saturated fatty acids	10.5	10.1	14.4	18.0	20.3
Insaturated					
Oleic acid	73.8	85.1	87.8	93.0	89.5
Animal fatty acids other					

24.1

43.5

22.0

24.8

365.4

32.3

25.0

26.6

26.8

than oleic, 1.V. 36-80)

Vegetable or marine,

Unsaturated acids,

(1.V. 116-130)

Unsaturated acids.

(1.V, over 130)

Total saturated and unsaturated

(1.V. 115)

acids

30.7

24.0

21.4

22.5

397.1 371.5 418.9

31.9

27.0

17.2

25.1

26.3

15.1

21.2

405.6

<sup>\*</sup>Factory consumption: government designation as reported in Facts for Industry's Consumption of animal and vegetable fatty acids, includes only the consumption in factories and does not, therefore, represent total consumption in all instances.

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#### MARKETS

ences in classification, and inclusion of low-resin fatty acids by Washington economists.

The chemical industry is its own best customer in fatty acids use. This year, CW estimates, manufacture of chemicals will take about 55 million lbs. of the total factory consumption. Most of these will be stearic and oleics. Current consumption will be a good 15 million lbs. over the government-reported use of 40 million (in '54) that went into chemical intermediates such as nitriles, amides, amines, quaternary ammonium salts. Another important fatty use outlet: production of metallic soaps.

It's difficult to pinpoint use of fatty acids in the chemical consuming group, since many of the acids end up in various other industries.

In resins and plastics fields, however, the pattern is somewhat clearer. During '57 some 46 million lbs. of fatty acids (about 12% the amount consumed by factories) will wind up in resins. That category, according to government figures, consumed about 30 million lbs. three years ago. This year's consumption of fatty acids breaks down into 25 million lbs. of unsaturated vegetable fatty acids; 7 million low-resin acids; and 5 million each of oleic and coconut-type.

Rubber products will also take a hefty slice of total factory consumption this year. The estimate: about 40 million lbs., some 5 million over '54's figure.

Fatty acids serve a three-fold purpose in rubber compounding: activation, acceleration, and softening. In the production of synthetic rubber, small quantities (no official data are available) of sodium soaps made from fatty acids, and stearic acids, lauric acids, are used as emulsifiers. In reclaiming rubber, oleic is the important softening agent, while tire production dips into the stearic acid group.

Soap Nudge: Soap production, despite the steady inroads made by detergents, gives some solid support to fatty acids use. Factory consumption by soaps in '57 will probably tally to almost 26 million lbs., or approximately 7% of the total available. Probably reflecting the soap vs. detergent battle for markets is this: fatty acids use in the former shows little radical change from the amounts consumed in '54, according to government statistics.

But what the acids have lost in the

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# MARKETS

soap outlets, they've gained in detergents. Consumption by the synthetic cleaning agents has shown a remarkable growth. Such factory consumption this year should hit about 40 million lbs., just about 10 times the amount concededly consumed as recently as '54. The jump is impressive, too, since many detergent makers prefer petroleum and coal-tar-derived alkylaryl sulfonates to the fatty alcohol-derived alkyl sodium sulfates. Why? Prices on the petroleum and coal-tar derivatives have been more stable than on fats and oils, the fatty acids sources.

Even for Oils: Use of fatty acids in lubricating oils and greases is expected to take about 8% of total factory consumption. That's more or less the same amount that was consumed in the post-Korean period. The steady consumption of fatty acids in this category has been more surprising since primary materials (animal and vegetable fats and oils) have been holding on as raw materials in lube products. Reason for the tenacious fatty acids hold on the market is thisthey're produced under carefully controlled conditions, can be tailored to specific lubricating oils specifications.

Paint and varnish makers are also steady fatty acids customers. This year these outlets should take between 20-22 million lbs. A little less than 75% of that factory fatty acids consumption will represent unsaturated materials derived from vegetable oils (e.g., linseed and soybean.)

The anticipated increase in take for '57 ('55 consumption was about 19 million) reflects the paint, varnish and lacquer industry's optimism concerning this year's sales. Recently, Gen. Joseph Battley, president of the paint trade's association, predicted that the industry would set a new sales record in '57. Indeed, sales of paint materials started this year off with a bang. According to government figures, the industry racked up total January sales of more than \$125 million. (Trade sales were almost \$71 million; industrial sales, a shade over \$54.5 million.)

Current demand for paints and varnishes is clipping along. The tempo may well convince paint manufacturers the time is ripe to compensate for rising costs, raise retail paint prices.

Smaller-but Welcome: Fatty acids outlets, as mentioned earlier, are ubiquitous. Toiletries and pharmaceuticals—a far cry from paints and varnishes - will, nonetheless, absorb about 11 million lbs., with stearic and oleic acids making up the bulk. Fatty acids' greatest toiletries use: as anionic emulsifying agents. They impart oiliness, adhesion, other desirable properties in cosmetics.

Textiles, printing inks, paper production, ore flotation, metal working and finishing, waxes and floor polishes, are only a few more of the many industries today consuming vegetable and animal-derived fatty acids. It's no wonder that spokesmen for the industry regard consumption of fatty acids, one-time by-product, as a very real yardstick of industrial activity.

# Data Changeovers

Chemical Market researchers soon will have to adjust to a number of minor changes in the way Federal agencies (e.g., the Bureau of the Census) group chemical products in reports of production, sales, wages, and similar data. The government's "Standard Industrial Classification Manual"—unchanged since 1945 has been thoroughly revised, will become official guide to government statisticians on July 1 (CW, Feb. 23, p. 22.)

One major proposal that didn't make it: petroleum refining, which, despite backing by the chemical industry, will not be merged (statistically) with industrial chemicals and other major segments of the basic chemical trade. As a result the new manual will retain separate groupings for chemicals (Group 28) and petroleum refining (Group 29), with changes limited to some of the items in each category. For instance, vegetable oils will move from Group 28 into 20, Food Industries.

Similarly, coke derived from cokeoven operations come out of Group 29 (petroluem refining), will be reclassified with blast-furnace coke as a sub-group of Primary Metals Industries (Group 33.)

There are many such changes, designed to provide more realistic business data. Their full impact, however, can't be measured until the new manual is published, and market analysts adjust to the revisions.

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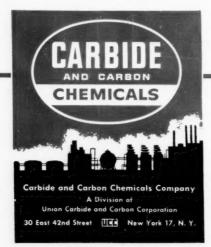
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High purity makes Piperazine Technical an ex-

cellent intermediate for tranquilizers, antihistamines, motion sickness and pinworm remedies.

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